V24935

Zentralwerkstatt und
Ersatzteildepot
für ORION-Produkte

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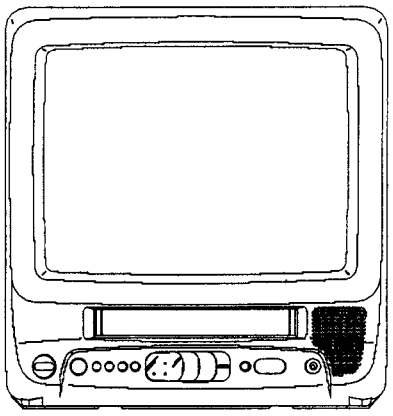
SERVICE MANUAL

ORION
COMBI 3601VT

COLOR TELEVISION/VIDEO CASSETTE RECORDER



VHS PAL

ORIGINAL
CHASSIS CODE A

Best. Nr. SM3601

Design and specifications are subject to change without notice.

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

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GENERAL SPECIFICATIONS

G-1.Outline of the Product

14 inch(335.4 mmV):Measured diagonally
Color CRT 90 degree deflection
1 -Speed 1/2" Video Cassette Recorder
☒VHS ☒Recorder/Player
☐VHS-C ☐Player

G-2.VCR Format

VHS Standard ☐NTSC ☒PAL ☐SECAM ☐PAL-M ☐PAL-N
☐VHS Hi-Fi Audio System

G-3.Video Recording System :Rotary,slant azimuth two head helical scan system
Luminance Component :FM recording
Chrominance Component :Low frequency converted direct recording

G-4.Broadcasting System : CCIR System B/G

G-5.Color System ☐NTSC ☒PAL ☐SECAM or Monochrome signal

G-6.NTSC Playback(PAL 60Hz) ☒Yes ☐No

G-7.MESECAM ☐Yes ☒No

G-8.Cassette Tape

☒VHS type video cassette tape Width 12.65mm (1/2 Inch)
☐VHS-C type video cassette tape Width 12.65mm (1/2 Inch)

G-9.Tape Speed

NTSC or PAL-M		PAL or SECAM	
☒SP	33.35 mm/sec	☒SP	23.39 mm/sec
☐LP	16.67 mm/sec	☐LP	11.69 mm/sec
☐SLP	11.12 mm/sec		

G-10.Recording/Playback Time

NTSC or PAL-M(NTSC Playback Only)
☒at SP Mode Max. 210 min. (with T-210 cassette)
☐at LP Mode Max. 420 min. (with T-210 cassette)
☐at SLP Mode Max. 630 min. (with T-210 cassette)

PAL or SECAM
☒at SP Mode Max. 300 min. (with E-300 cassette)
☐at LP Mode Max. 600 min. (with E-300 cassette)

G-11.Rewind/Fast Forward Time(Approx.)

☒FF:2'15"/Rew:1'48" (☐ T-120 cassette ☒ E-180 cassette)
☐FF:3'40"/Rew:2'50" (☐ T-120 cassette ☐ E-180 cassette)

G-12.Search Speed

☒SP 5 and 7 Times(PAL)
☒SP 3 and 5 Times(NTSC)
☐SLP _____ Times

G-13.Slow Speed

☒SP 1/ 5 ~1/30 Times
☐LP _____ Times
☐SLP _____ Times

G-14.Frame Advance

☒SP 1/10 Times
☐LP _____ Times
☐SLP _____ Times

G-15.Antenna Input Impedance

VHF/UHF 75 ohm unbalanced

GENERAL SPECIFICATIONS

G-16.Tuner and Receiving channel ☒1Tuner Syatem ☐2Tuner System

Tuner : Contactless Electric tuner

☐Oscar(W/O HYPER) ☒Oscar(W/ HYPER) ☐France CATV) ☐Others

Receiving channel

VHF	(LOW)	E 2 ch	E 4 ch
	(HIGH)	E 5 ch	E12 ch
	(CATV)	S 1 ch	S41 ch
UHF		E21 ch	E69 ch

Tuning System

☒Frequency syn. ☐Voltage syn. ☐Others

G-17.Preset Channel

80 channels

G-18.Intermediate Frequency

Picture(FP)	38.9 MHz	___ MHz	___ MHz
Sound (FS)	33.4 MHz	___ MHz	___ MHz
FP-FS	5.5 MHz	___ MHz	___ MHz

G-19. Stereo/Dual TV Sound

☐Yes(☐NICAM ☐GERMAN ☐USA ☐JAPAN) ☒No

G-20.Video Signal

Input Level 1 Vp-p / 75 ohm

Output Level 1 Vp-p / 75 ohm

S/N Ratio 53 dB (Weighted)

Horizontal Resolution at SP Mode 240 Lines

G-21.Audio Signal

Input Level

Line	-3.8 dB /	50 Kohm
RCA	- dB /	- Kohm

Output Level

Line	-3.8 dB /	1 Kohm
RCA	- dB /	- Kohm

(0dB=0.775 V rms)

S/N Ratio at SP Mode 42 dB

Harmonic Distortion : 1.5 % (1KHz)

Frequency Response : at SP Mode 100 Hz ~ 10 KHz

at LP Mode ___ Hz ~ ___ KHz

at SLP Mode ___ Hz ~ ___ KHz

G-22.Heads

Video	☒ 2	Rotary Heads
FM Audio	☐ ___	Rotary Heads
Audio / Control	☒ 1	Stationary Head (☒Mono ☐Stereo(L,R))
Erase	☒ 1	Full Track Erase

G-23.Motor: 3 Motors

☒Tape/Cassette Loading

☒Cylinder (Direct Drive)

☒Capstan (Direct Drive)

G-24.Power Source

230 V ☒AC 50Hz ☐AC 60Hz

☐EXT DC Jack ___ V

G-25.Power Consumption: (Approx.)

55 W at AC 230 V 50 Hz

___ W at DC ___ V

(at TV and VCR ON)

Stand by: 6 W at AC 230 V 50 Hz

Per Year: - kWh / Year

GENERAL SPECIFICATIONS

G-26.Dimensions(Approx.)

__362__mm(W) __369__mm(D) __382__mm(H)

G-27.Weight(Approx.) Net : __12.8__Kg (__-__lbs)

Gross: __14.5__Kg (__-__lbs)

G-28.Cabinet Material

Cabinet Front:	☒PS ☐ABS	☒94HB ☐94V2 ☐94V0	☐DECABROM ☐NON-DECA
Cabinet Rear:	☒PS ☐ABS	☒94HB ☐94V2 ☐94V0	☐DECABROM ☐NON-DECA
Jack Panel:	☒PS ☐ABS	☒94HB ☐94V2 ☐94V0	☐DECABROM ☐NON-DECA

G-29.Cassette Loading System: ☒Front Cassette Loading System ☐Top Loading System

G-30.Tape Counter: Linear Time Tape Counter

G-31.Protector: ☒Power Fuse ☐Dew Sensor

G-32.Regulation

Safety

☐UL	☐CSA	☐SAA	☐SI	☒CE	☐SEV
☐BS	☐NF	☐NEMKO	☐FEMKO	☐DEMKO	☐IEC65
☐SEMKO	☐NZ	☐HOMOLO	☐SABS	☐CNS	☐SISIR
☐NOM	☐AS3159	☐DENTORI	☐UNE	☐GOST	☐NONE

Radiation

☐FCC	☐DOC	☐FTZ	☐PTT	☒CE	☐SEV
☐SABA	☐SI	☐NF	☐NZ	☐HOMOLO	☐UNE
☐CNS	☐CISPR13	☐DENTORI	☐AS/NZS	☐NONE	

X-Radiation

☒PTB	☐DHHS	☐HWC	☐DENTORI	☐NONE

G-33.Temperature

Operation __5__ ℃~__40__℃

Storage __-20__ ℃~__60__℃

G-34.Operating Humidity

Less than __80__ %RH

G-35.Clockand Timer

Built-in __1__ Month __8__ Events Programmable Timer

One Touch Recording : Max Time __SP Mode:5__ Hours

Sleep Timer	☒Yes Max __120__ Min.(__10__ Min. Step)	☐No
On/Off Timer	☒Yes __1__ Programs	☐No
Wake Up Timer	☐Yes _____ Programs	☒No

G-36.Timer back up Time

More than __30__ Minutes (at Power Off Mode)

G-37.Terminals

☒VHF/UHF Antenna	☒Din Type ☐F-Type ☐France Type	
☒Video Input(Front)	☒Phono Jack (RCA ø8.3) (Option)	
☐Video Input(Rear)	☐Phono Jack (RCA ø8.3)	
☐Video Output(Rear)	☐Phono Jack (RCA ø8.3)	
☒Audio Input(Front)	☒Phono Jack (RCA ø8.3) (Option)	
☐Audio Input(Rear)	☐Phono Jack (RCA ø8.3)	
☐Audio Output(Rear)	☐Phono Jack (RCA ø8.3)	
☒21 Pin (x 1)	☐DC Jack 12V (Center +)	
☐AC Inlet	☐Ext Speaker	☐Diversity
☐Ear Phone	☒Head Phone	

GENERAL SPECIFICATIONS

G-38.Indicator

☐Power (___) ☒Rec/OTR (Red) ☐Play (___) ☐Tape-In (___) ☒Timer Rec (Red)
☒Stand By (Red) ☐On Timer (___) ☐Rental Mode(or Clear Picture) (___)
☐One Touch Playback(Button Lights) ☐Dew Sensor(Play LED Flush)

G-39.On Screen Display

☒Menu
- ☐ATS
- ☒Timer Rec Set
- ☒Ch Set-up
  - ☒Auto Tuning ☐Ch Mapping
  - ☒Ch Tuning ☒CH Allocation
- ☒TV Set-up
  - ☒On/Off Timer Set ☐Audio
  - ☒Picture ☐Tuning Mode
- ☐VCR Set-up
  - ☒Auto Repeat On/Off ☐System Select
  - ☐Scena Repeat
- ☐User Registration
- ☒System Set-up
  - ☒Clock Set(☒Calendar ☐12H ☒24H)
  - ☒Language

☒G-CODE(or SHOWVIEW or PLUSCODE)No. Entry(Option)
☒Clock ☒CH/AV
☒Tape Counter ☐Tape Speed
☒Sleep Time ☒Sound Mute
☒Control Level (☒Vol,☒Bright,☒Cont,☒Color,☐Tint,☒Sharpness)
☒Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause
☒Auto Tracking/Manual Tracking
☒Index ☒Repeat
☐Tone 1/2 ☐Stereo

G-40.OSD Language

☒Eng ☒Ger ☒Fre ☒Spa ☒Ita ☐Por

OSD Language Setting

☐Eng ☒Ger ☐Fre ☐Spa ☐Ita ☐Por

G-41.Speaker

3 inches Imp. 8 ohm x 1 pcs
Max 1.5 W Typical
10% 1.0 W Typical

G-42.EXT Speaker

☐Yes _____ W/Imp _____ ohm ☒None

G-43.Carton

Master Carton: ☐Need ☒No Need
Content: ---- Set
Material: ---- / ---- Corrugated Carton
Dimensions: ----mm(L) ----mm(W) ----mm(D)
Description of Origin ☐Yes ☐No

Gift Box

Material ☐AB Double/Brown Corrugated Carton (☐with Photo Label)
☒AB Double/White Corrugated Carton (☐with Photo Label)
☐AB Double Full Color Carton W/Photo
Dimensions: 447 mm(W) 423 mm(D) 443 mm(H)
Design: As Per BUYER's
Description of Origin: ☐Yes ☒No
Drop Test Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
Height ☐25cm ☐31cm ☐46cm ☒62cm ☐80cm
Container Stuffing: 700 Sets / 40' container

GENERAL SPECIFICATIONS

G-44.Accessories

☒Owner's Manual(☐W/ Guarantee Card) [German]

☐Channel Film	☐Dew Caution Sheet
☒Remote Control Unit	☐AC Plug Adaptor
☐U/V Mixer	☒Quick Set-up Sheet
☐Rod Antenna (☐One Pole ☐Two Pole/☐F-Type ☐DIN Type ☐France Type)	
☐Loop Antenna(☐F-Type ☐DIN Type ☐France Type)	
☐DC Car Cord (Center+)	☒Battery (UM-__4__x__2__)
☒Guarantee Card	☐AC Cord
☐Warning Sheet☐AV Cord (2Pin-1Pin)	
☐Circuit Diagram	☐Registration Card
☐Antenna Change Plug	☐PTB Sheet
☐Service Facility List	☐300 ohm to 75 ohm Antenna Plug
☐RF Cable	☐Euro Warranty Information Sheet

G-45.Other Features

☒Auto Head Cleaning	☒Index Search
☒Auto Tracking	☒Auto Search
☐CH Auto Set-Up/Auto Clock	☐ATS
☒VIDEO PLUS+(SHOWVIEW,G-CODE) (Option)	
☒HQ (VHS Standard High Quality)	☐VPS ☐PDC
☒Auto Power On, Auto Play, Auto Rewind, Auto Eject,Auto Repeat System	
☒Forward / Reverse Picture Search	☐SQPB
☐One Touch Playback	☐CATV
☐Auto CH Memory	☐Anti-Theft
☐Rental Mode	☒T'Text(☐Fast,☐Top,☒Uni)
☒TV Auto Shutt off Function	☒TV Monitor

G-46.Switch

Front

☒Power(Tact)	☒Channel Up	☒Volume Up
☒Play	☒Channel Down	☒Volume Down
☐Pause/Still	☒F.FWD/Cue	☒Rew/Rev
☐System Select	☒Eject/Stop	☒Rec/OTR
☐One Touch Playback	☒Main Power SW	

Rear

☐Color On/Off (SECAM only)	☐Degauss
☐Main Power SW	☐AC/DC

G-47.Magnetic Field

☒BV : +0.45G	☐BV : +0.35G	☐BV : +0.25G
BH : 0.18G	BH : 0.30G	BH : 0.30G
☐BV : -0.15G	☐BV : -0.25G	☐BV : -0.50G
BH : 0.15G	BH : 0.15G	BH : 0.30G

GENERAL SPECIFICATIONS

G-48.Remote Control Unit: RC-CH

Power Source: D.C 3 V Battery UM - 4 x 2

- ☒ 0/AV
- ☒ 1
- ☒ 2
- ☒ 3
- ☒ 4
- ☒ 5
- ☒ 6
- ☒ 7
- ☒ 8
- ☒ 9
- ☐ ./..
- ☒ Call
- ☒ TV Monitor
- ☒ Sleep Timer
- ☒ Timer Rec
- ☒ Counter Reset
- ☐ AD Skip
- ☒ Ch/Tr/Page Up
- ☒ Ch/Tr/Page Down
- ☒ Volume Up
- ☒ Volume Down
- ☒ Mute
- ☒ Menu
- ☒ Enter/Hold
- ☒ Cancel/Ch Skip/F/T/B
- ☐ Set Up
- ☐ Set Down
- ☐ Set Right
- ☐ Set Left
- ☐ Program
- ☐ Speed
- ☒ Text/Mix/TV
- ☒ Index/Time Text
- ☒ Zero Return
- ☒ Power
- ☒ Eject
- ☐ Play
- ☐ Play/Up
- ☒ Play/Slow/Up
- ☐ F.FWD
- ☒ F.FWD/Right
- ☐ Rew
- ☒ Rew/Left
- ☒ Pause/Still
- ☐ Pause
- ☐ Stop
- ☒ Stop/Down
- ☒ REC/OTR
- ☒ ATR/Reveal
- ☐ VIDEO PLUS+(SHOWVIEW,G-CODE)
- ☒ Program/VIDEO PLUS+(SHOWVIEW,G-CODE)

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the 2 screws ② which are used for holding the Back Cabinet.
3. Remove the AC cord from the AC cord hook ③.
4. Remove the Back Cabinet in the direction of arrow.

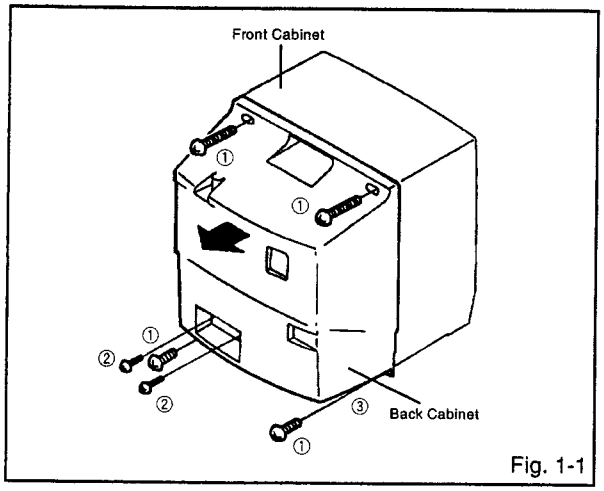


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap.
   (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors:
   (CP801 and CP850).
3. Remove the CRT PCB in the direction of arrow.

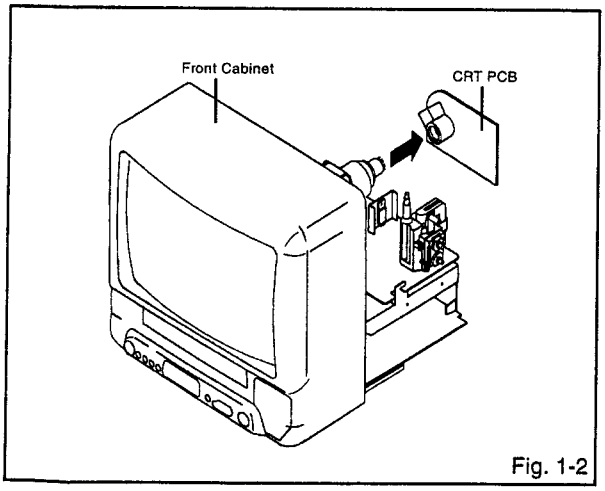


Fig. 1-2

1-3: TV/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:
   (CP757, CP302, CP401, CP501, CP502 and CP351).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

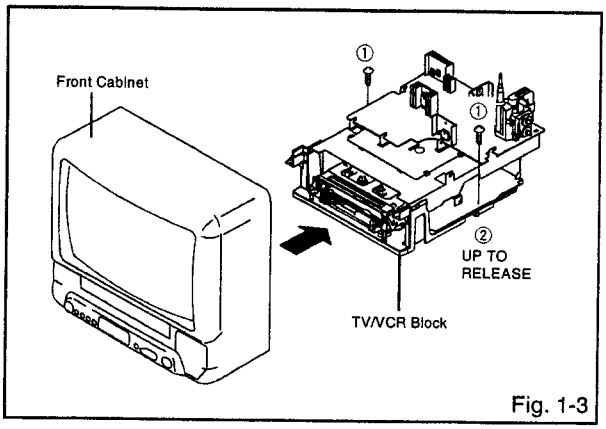


Fig. 1-3

1-4: MAIN PCB (Refer to Fig. 1-4)

1. Remove the screw ①.
2. Remove the Main PCB Holder.
3. Remove the 2 screws ②.
4. Remove the 3 screws ③.
5. Disconnect the following connectors:
   (CP810, CP820 and CD401).
6. Remove the Main PCB in the direction of arrow.

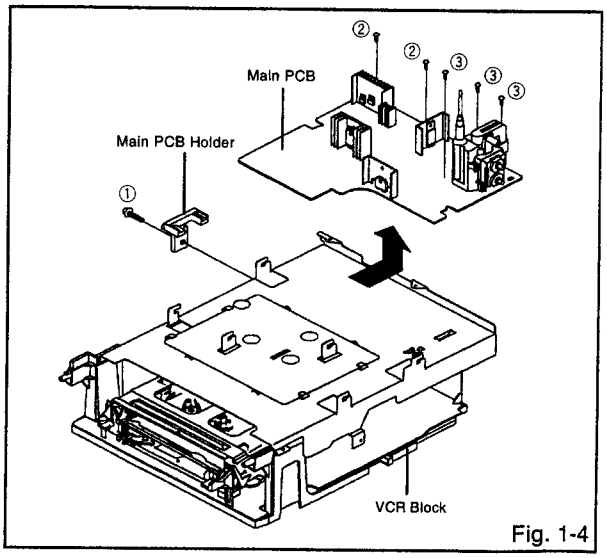


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: DECK SHIELD PLATE (Refer to Fig. 1-5)

1. Remove the 2 screws ①.
2. Remove the screw ②.
3. Remove the screw ③.
4. Remove the Deck Shield Plate in the direction of arrow (A).
5. Remove the screw ④.
6. Remove the Shield Plate Bottom in the direction of arrow (B).

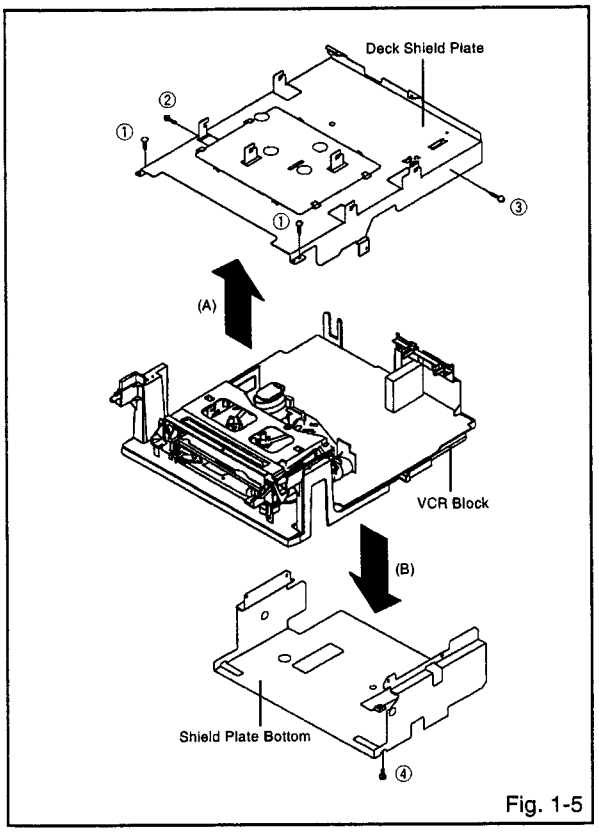


Fig. 1-5

1-6: DECK CHASSIS (Refer to Fig. 1-6)

1. Remove the 3 screws ①.
2. Disconnect the following connectors: (CD1002, CP1004, CP1005, CP1006, CP4001, CP4004 and CP4005).
3. Remove the Deck Chassis in the direction of arrow.

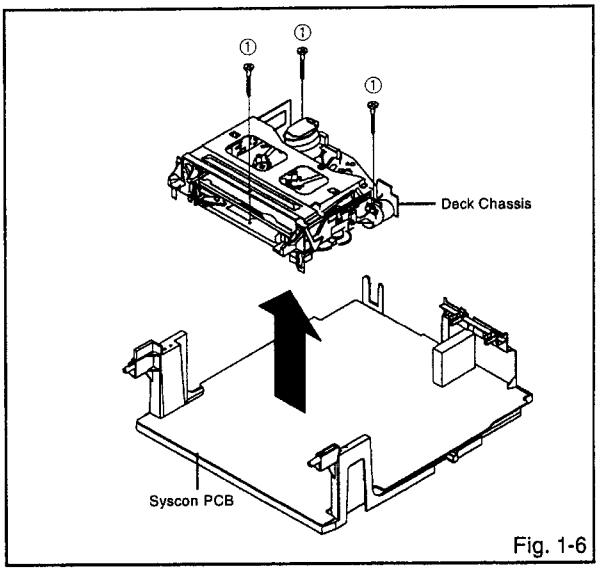


Fig. 1-6

1-7: JACK PLATE AND SYSCON PCB (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the Syscon PCB in the direction of arrow (A).
3. Remove the 2 screws ②.
4. Unlock the 2 supports ③.
5. Remove the Jack Plate in the direction of arrow (B).

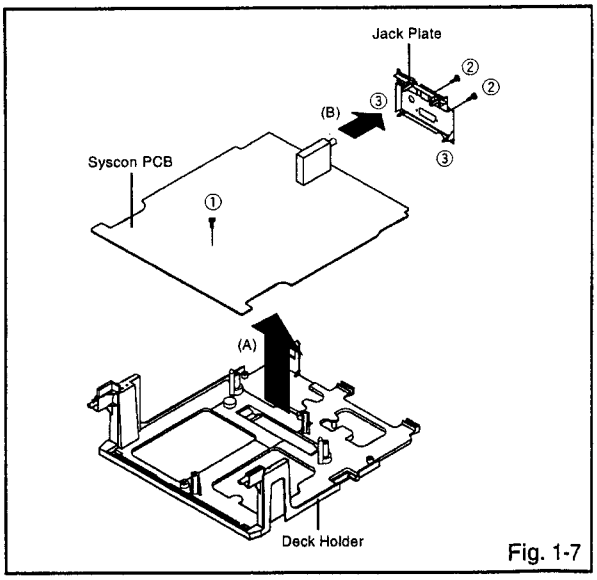


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

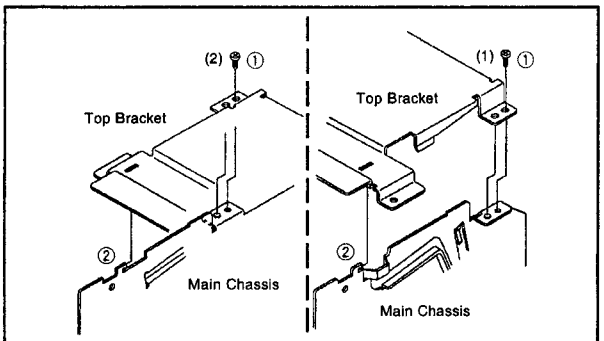
2. REMOVAL OF DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Remove the 2 screws ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

When you install the Top Bracket, install the screw (1) first, then install the screw (2).



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-1

2-2: FLAP LEVER/TAPE GUIDE R (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the Polyslider Washer ①.
3. Remove the Flap Lever.
4. Unlock the 3 supports ② and remove the Tape Guide R.

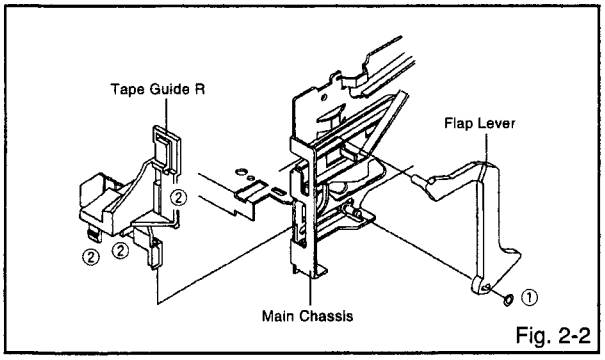
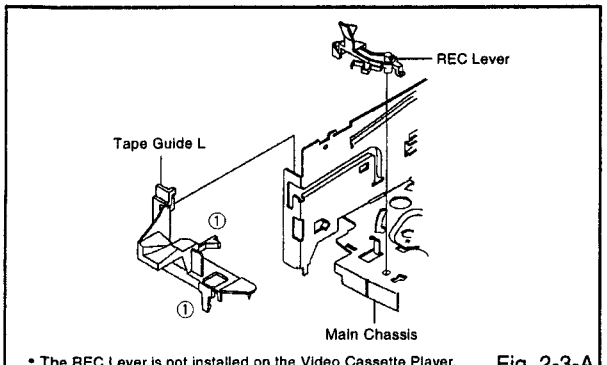


Fig. 2-2

2-3: TAPE GUIDE L (Refer to Fig. 2-3-A)

1. Move the Cassette Holder Ass'y to the back side.
2. Unlock the 2 supports ① and remove the Tape Guide L.
3. Remove the REC Lever. (Recorder only)

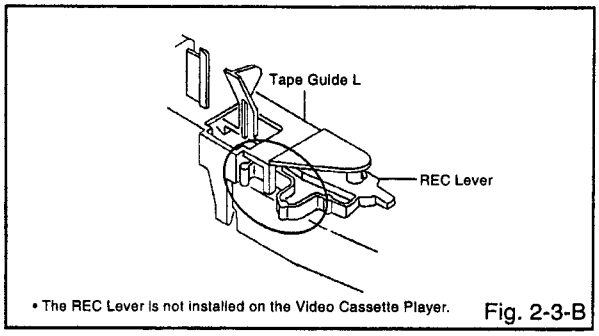


• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-A

NOTE

When you install the Tape Guide L, install as shown in the circle of Fig. 2-3-B. **(Refer to Fig. 2-3-B)**



• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-B

2-4: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-4)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

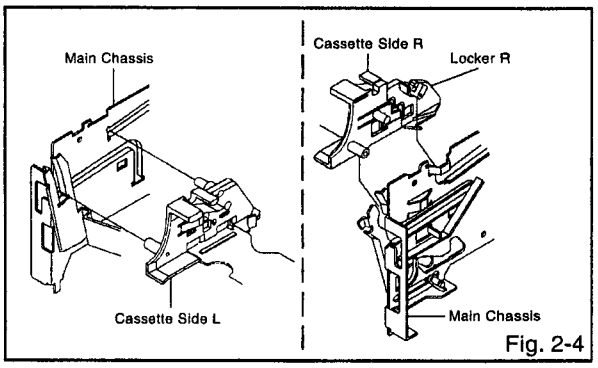


Fig. 2-4

2-5: CASSETTE SIDE L/R (Refer to Fig. 2-5)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.

NOTE

When you install the Cassette Side L/R, be sure to move the Locker L/R after installing.

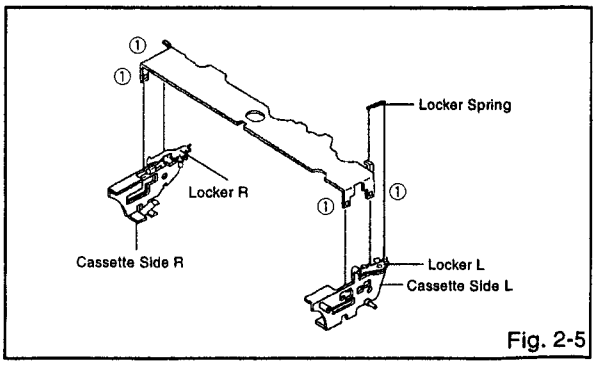


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LINK ASS'Y (Refer to Fig. 2-6)

1. Set the Link Ass'y to the Eject position.
2. Remove the (A) side of the Link Ass'y first, then remove the (B) side.

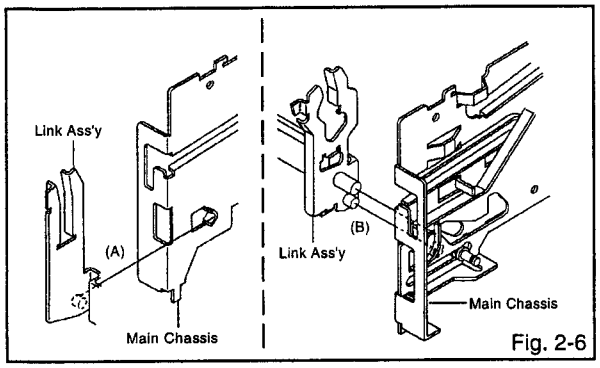


Fig. 2-6

2-7: LOADING MOTOR ASS'Y (Refer to Fig. 2-7)

1. Remove the Link Lever.
2. Remove the Dumper Spring.
3. Remove the 2 screws ①.
4. Unlock the support ② and remove the Loading Motor Ass'y.
5. Unlock the 2 supports ③ and remove the Deck PCB (BOT).

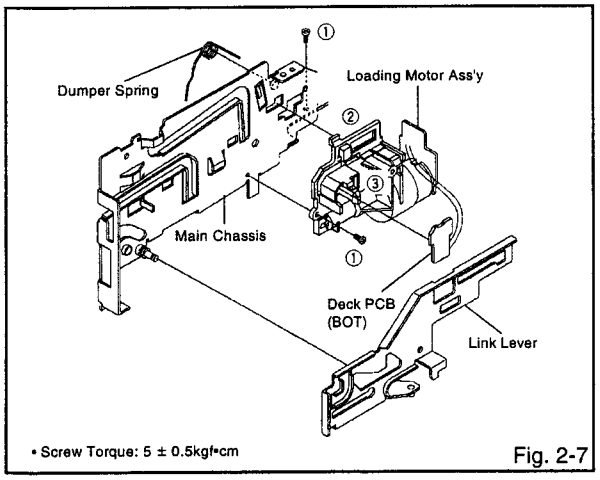


Fig. 2-7

2-8: SENSOR COVER L (Refer to Fig. 2-8)

1. Unlock the support ① and remove the Sensor Cover L.
2. Unlock the 2 supports ② and remove the Deck PCB (EOT).

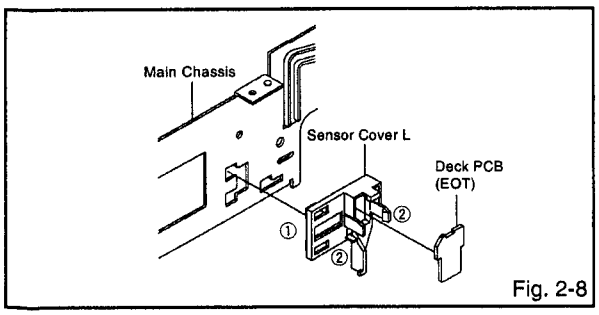


Fig. 2-8

2-9: TENSION ASS'Y (Refer to Fig. 2-9-A)

1. Move the Inclined S Ass'y to the back side.
2. Remove the Tension Spring.
3. Unlock the support ① and remove the Tension Arm Ass'y.
4. Remove the Tension Adjust.
5. Unlock the 2 supports ② and remove the Tension Band Ass'y.
6. Unlock the support ③ and remove the Tension Holder.
7. Remove the SS Brake Spring.
8. Remove the SS Arm Brake.

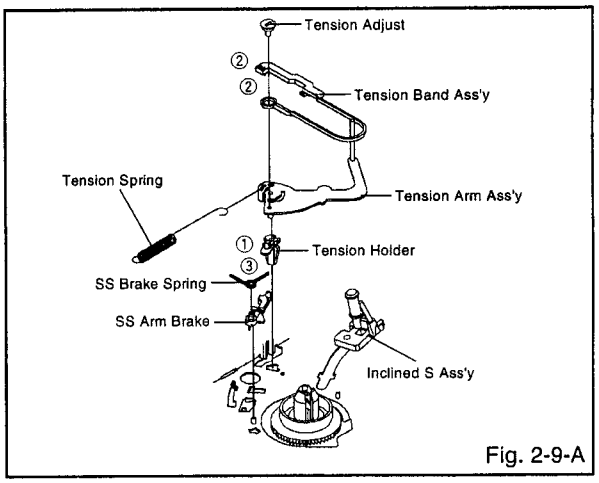


Fig. 2-9-A

NOTE

When you install the Tension Adjust, install as shown in Fig. 2-9-B. **(Refer to Fig. 2-9-B)**

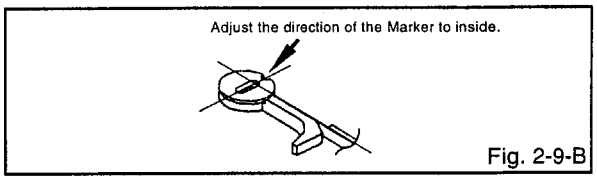


Fig. 2-9-B

2-10: T BRAKE ASS'Y (Refer to Fig. 2-10)

1. Remove the T Brake Spring.
2. Remove the T Brake Ass'y.

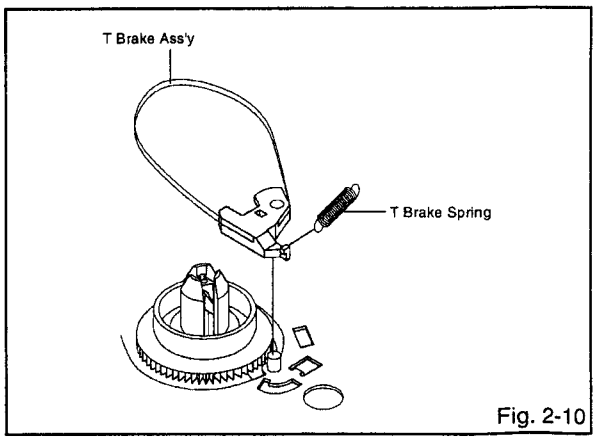


Fig. 2-10

DISASSEMBLY INSTRUCTIONS

2-11: S REEL/T REEL (Refer to Fig. 2-11)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-11)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and oil it (FL OIL #6115). (If you do not oil, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

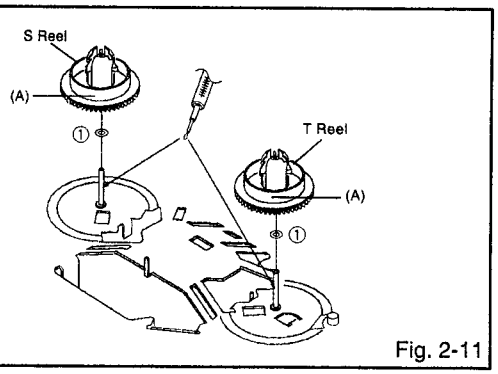
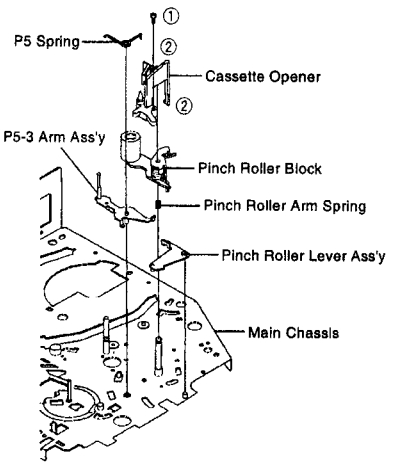


Fig. 2-11

2-12: PINCH ROLLER BLOCK/P5-3 ARM ASS'Y (Refer to Fig. 2-12-A)

1. Remove the P5 Spring.
2. Remove the screw ①.
3. Unlock the 2 supports ② and remove the Cassette Opener.
4. Remove the Pinch Roller Block, Pinch Roller Arm Spring, Pinch Roller Lever Ass'y and P5-3 Arm Ass'y.



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-12-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. When you install the Pinch Roller Block, install as shown in the circle of Fig. 2-12-B. **(Refer to Fig. 2-12-B)**

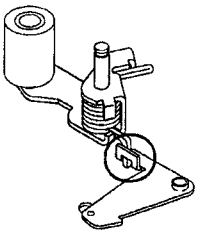


Fig. 2-12-B

2-13: A/C HEAD (Refer to Fig. 2-13-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-13-B. **(Refer to Fig. 2-13-B)**
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

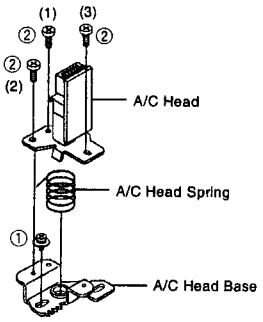


Fig. 2-13-A

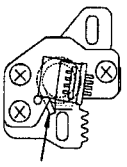
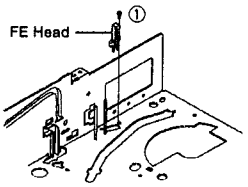


Fig. 2-13-B

2-14: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-14)

1. Remove the screw ①.
2. Remove the FE Head.



• The FE Head is not installed on the Video Cassette Player.

Fig. 2-14

DISASSEMBLY INSTRUCTIONS

2-15: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-15)

1. Unlock the support ① and remove the AHC Ass'y.
2. Remove the 3 screws ②.
3. Remove the Cylinder Unit Ass'y.

NOTE

When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.

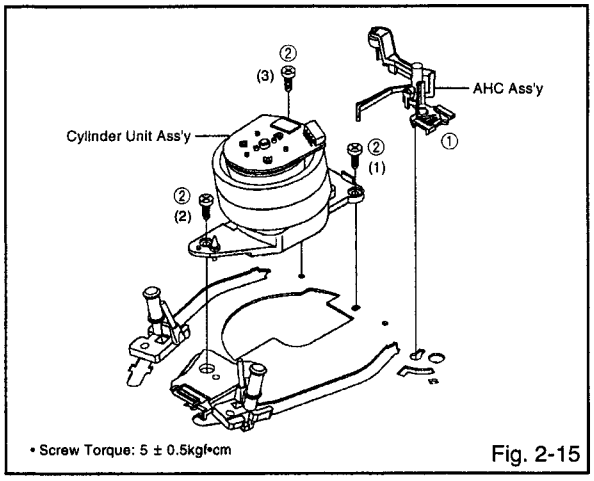


Fig. 2-15

2-16: CAPSTAN DD UNIT (Refer to Fig. 2-16)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.

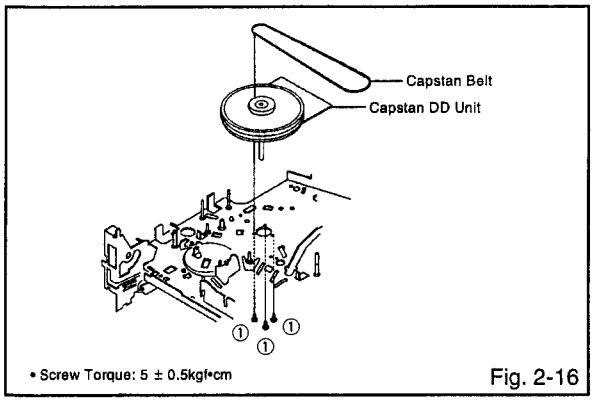


Fig. 2-16

2-17: MIDDLE GEAR/MAIN CAM (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①, then remove the Middle Gear.
2. Remove the E-Ring, then remove the Main Cam, P5 Cam and Pinch Roller Cam.
3. Remove the Polyslider Washer ②, then remove the Joint Gear.

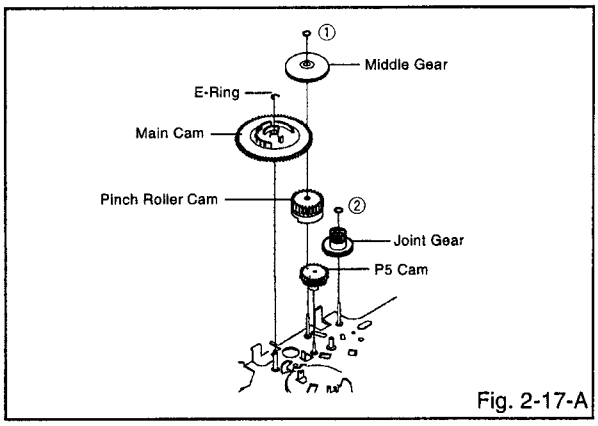


Fig. 2-17-A

NOTE

When you install the Pinch Roller Cam, P5 Cam and Main Cam, align each marker. **(Refer to Fig. 2-17-B)**

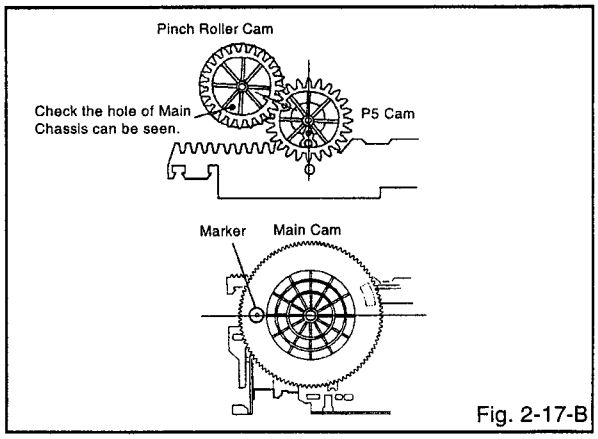


Fig. 2-17-B

2-18: CLUTCH ASS'Y (Refer to Fig. 2-18)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y, Ring Spring and Coupling Gear.
3. Unlock the 2 supports ② and remove the Clutch Lever.

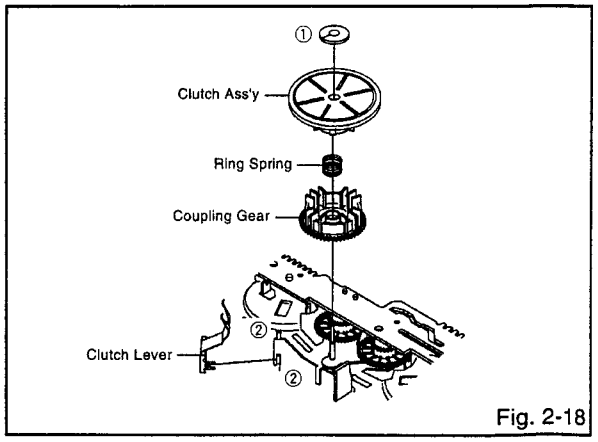


Fig. 2-18

DISASSEMBLY INSTRUCTIONS

2-19: LOADING GEAR S/T ASS'Y (Refer to Fig. 2-19-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Capstan Brake Spring.
3. Slide the Main Rod and remove the Capstan Brake Ass'y.
4. Remove the Main Rod, Tension Lever, Clutch Actuator, Idler Arm Ass'y.
5. Remove the screw ② and washer ③.
6. Remove the LED Reflecter.
7. Remove the Loading Arm S Ass'y and Loading Arm T Ass'y.
8. Remove the Loading Gear S and Loading Gear T.
9. Remove the Loading Gear Spring.

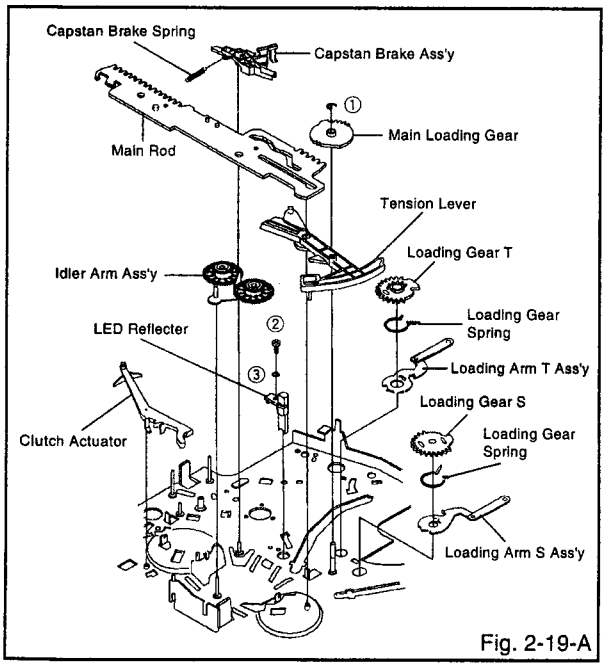


Fig. 2-19-A

NOTES

1. When you install the Loading Arm S Ass'y, Loading Arm T Ass'y and Main Loading Gear, align each marker. **(Refer to Fig. 2-19-B)**

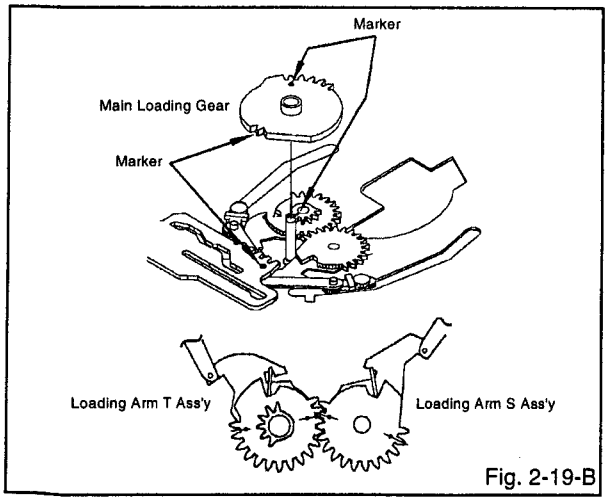


Fig. 2-19-B

2. When you install the Clutch Actuator, install as shown in the circle of Fig. 2-19-C. **(Refer to Fig. 2-19-C)**

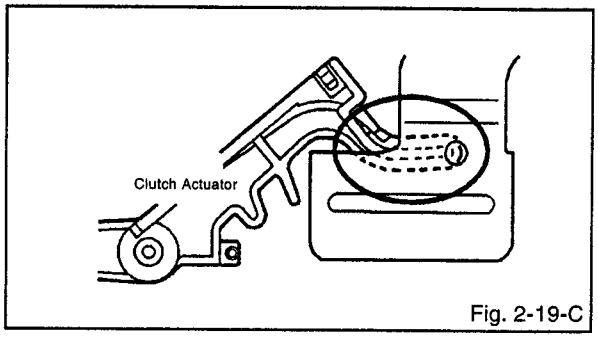


Fig. 2-19-C

2-20: INCLINED S/T ASS'Y (Refer to Fig. 2-20)

1. Unlock the support ① and remove the P4 Cover.
2. Unlock the support ② and remove the Loading Gear Holder.
3. Remove the Inclined S.
4. Remove the Inclined T.
5. Remove the 2 screws ③, then remove the Guide Roller and O-Ring.

NOTE

Do not touch the roller of Guide Roller.

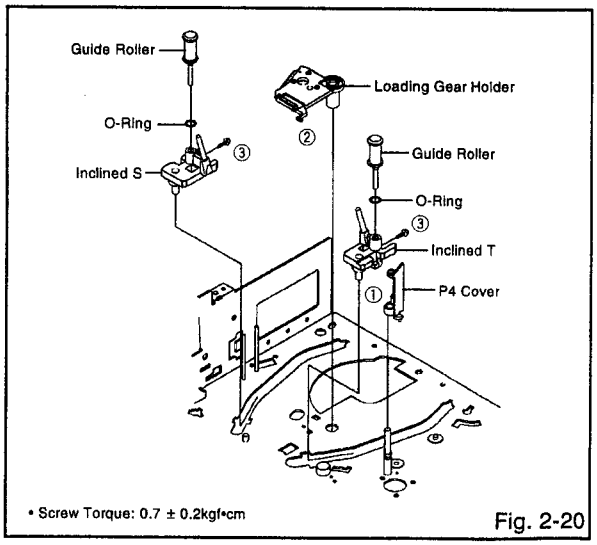


Fig. 2-20

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 3-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

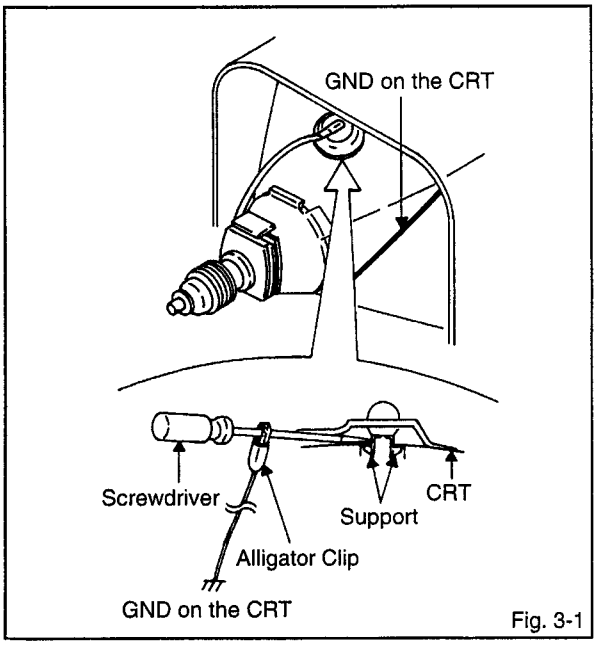


Fig. 3-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 3-2.)**

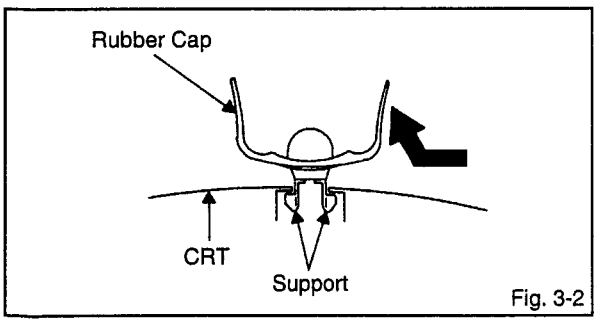


Fig. 3-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**

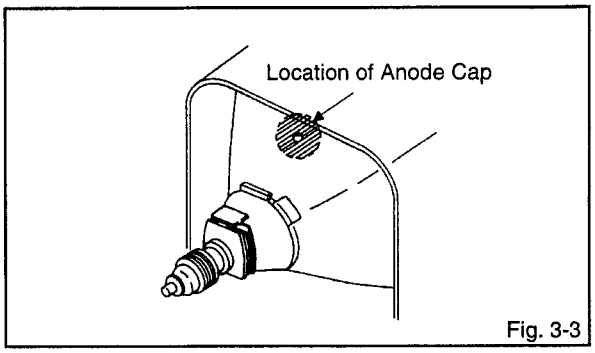


Fig. 3-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**

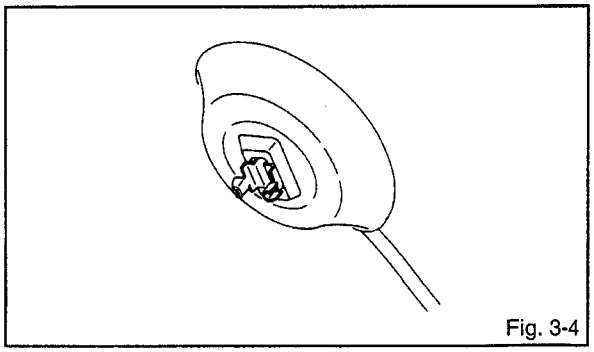


Fig. 3-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 3-5**.

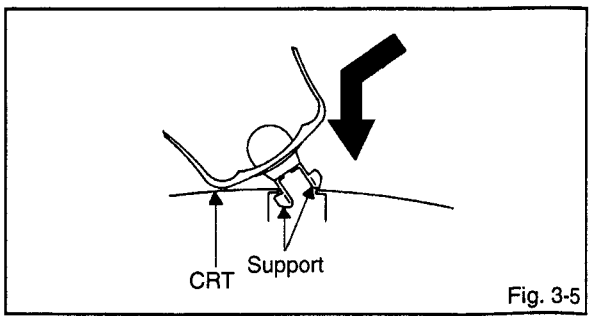


Fig. 3-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

KEY TO ABBREVIATIONS

A	A/C	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	BGP	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	C	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	DATA (SY-CE)	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	E	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	F	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	GEN	:	Generator
	GND	:	Ground
H	H.P.F	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	IC	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	KIL	:	Killer
L	L	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	M	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	NC	:	Non Connection
	NR	:	Noise Reduction
O	OSC	:	Oscillator
	OPE	:	Operation
P	PB	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	R	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	S. CLK	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch

KEY TO ABBREVIATIONS

S	**SYNC**	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter SERVICE MODE, unplug AC cord till lost actual clock time. Then press and hold Vol (-) button of main unit and remocon key simultaneously.

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

Set Key	Remocon Key	Operations
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	Adjusting of the Tracking to the center position. NOTE: Also can be adjusted by pressing the ATR button for more than 2 seconds during PLAY.
VOL. (-) MIN	6	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF USING HOURS). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
VOL. (-) MIN	7	Releasing of PROTECTION PASSWORD.
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The EOT/BOT/Reel sensor do not work at this moment. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	■	■	
Capstan Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■	■	■	●	Clean the Head

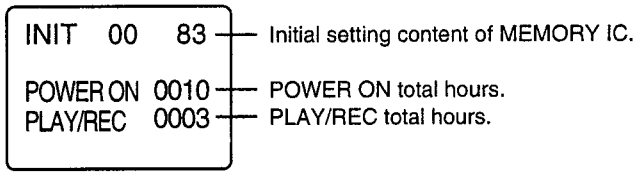
■ : Clean
● : Replace

CONFIRMATION OF USING HOURS

POWER ON total hours and PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: The confirmation of using hours will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and the Channel button **(6)** on the remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

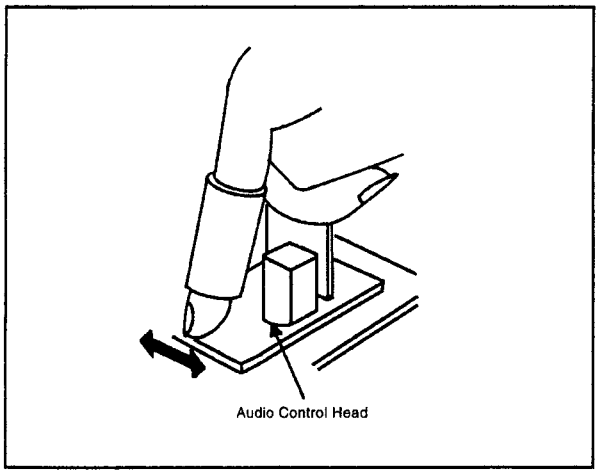
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

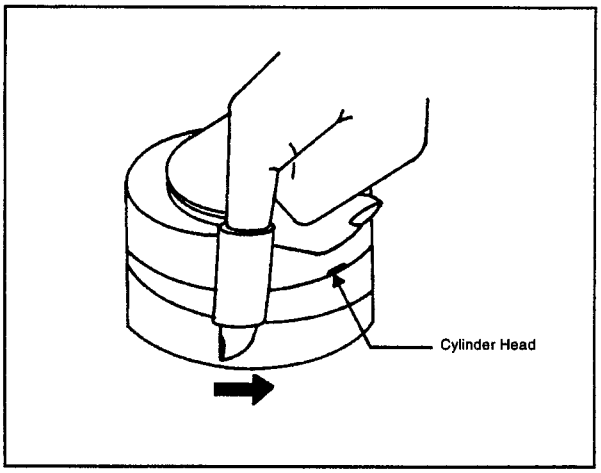
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

- Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head. Use the chamois one by one.



NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTES:

- **Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.**
- **No need the setting for after INI 3F.**

ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA
00	00	0C	00	18	A3	24	00	30	04	3C	6C
01	16	0D	F3	19	89	25	5F	31	04	3D	2B
02	04	0E	35	1A	36	26	00	32	20	3E	21
03	6A	0F	66	1B	5F	27	F0	33	1B	3F	15
04	00	10	FA	1C	0A	28	01	34	00		
05	00	11	2E	1D	F4	29	F0	35	00		
06	00	12	00	1E	05	2A	01	36	00		
07	0D	13	3F	1F	F3	2B	00	37	40		
08	C0	14	80	20	00	2C	00	38	00		
09	21	15	2A	21	00	2D	01	39	10		
0A	21	16	00	22	00	2E	06	3A	23		
0B	0C	17	35	23	00	2F	01	3B	C0		

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control simultaneously.
3. ADDRESS and DATA should appear as FIG 1.

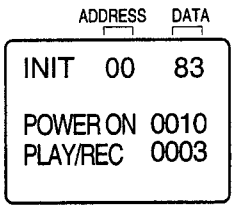
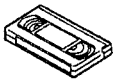
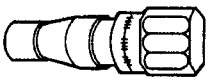
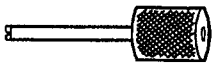
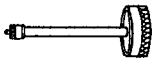
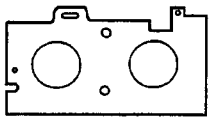
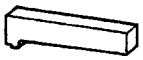
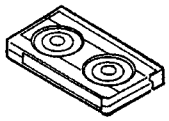
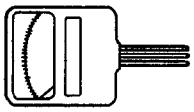


Fig. 1

4. ADDRESS is now selected and should "blink". Using the SET + or - keys on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will "blink".
6. Again, step through the DATA using SET + or - until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

(For 2 head 1 speed model, 4 head model) VHS Alignment Tape JG001E (VP_1S-LI6 ^{3}) JG001F (VP_1S-CO1 ^{3}) JG001R (VP_1S-LI6 ^{3}H) JG001U (VP_1S-X6 ^{3}) 	**(For 2 head 2 speed model)** VHS Alignment Tape JG001C (VP_2S-LI6 ^{3}) JG001D (VP_2S-CO1 ^{3}) JG001V (VP_2S-X6 ^{3}) 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 	JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 
JG153 X Value Adjustment Screwdriver 	JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 
Tentelometer 			

Part No.	Remarks
JG001E	Monoscope, 6KHz **(For 2 head 1 speed model, 4 head model)**
JG001F	Color Bar, 1KHz **(For 2 head 1 speed model, 4 head model)**
JG001R	Hi-Fi Audio **(For HI-FI model)**
JG001U	X Value Adjustment **(For 2 head 1 speed model, 4 head model)**
JG001C	Monoscope, 6KHz **(For 2 head 2 speed model)**
JG001D	Color Bar, 1KHz **(For 2 head 2 speed model)**
JG001V	X Value Adjustment **(For 2 head 2 speed model)**
JG002B	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	Brake Torque (T Reel Ass'y)
JG002F	VSR Torque, Brake Torque (S Reel)
JG005	Guide Roller Adjustment
JG153	X Value Adjustment
JG022/JG024A	Reel Disk Height Adjustment
JG100A	Playback Torque, Back Tension Torque During Playback

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Cassette Holder, short circuit between **TP1001** and **GND. (Refer to ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE)** In this condition the BOT/EOT/Reel Sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A.**
3. Confirm that "A" of the reel disk is lower than "B" of the reel disk height adjustment jig **(JG024A)**, and is higher than "C". If it is not enough height, adjust to 10(+0.2, -0) mm with the height adjustment washer.
4. Adjust the other reel in the same way.

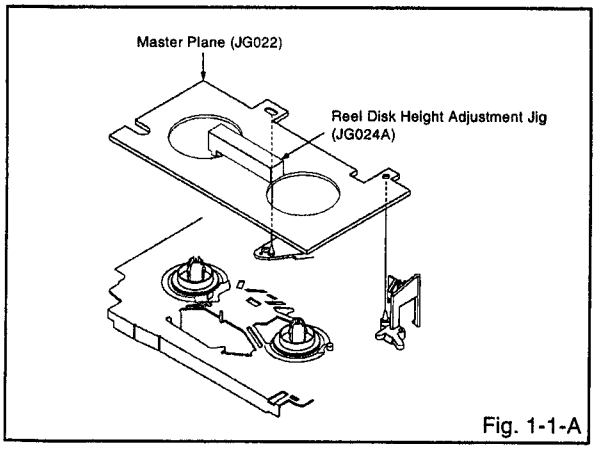


Fig. 1-1-A

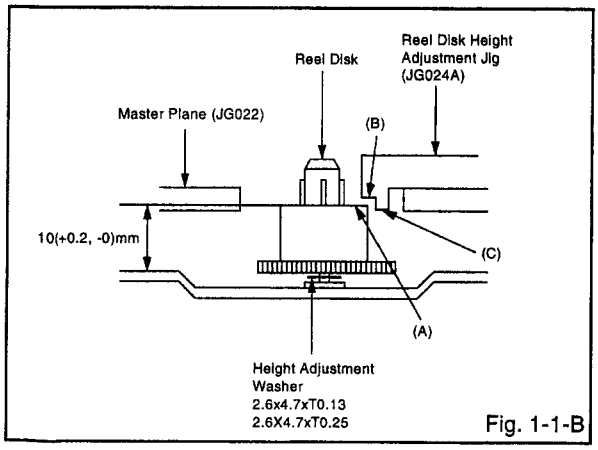


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the Tension Adjust until the edge of the Tension Arm is positioning within 0.5mm range from the standard line center of Main Chassis.
   After this adjustment, confirm that the cut position is located in "A" area as shown in **Fig. 1-2-B.** If it is located in "B" area, adjust again.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

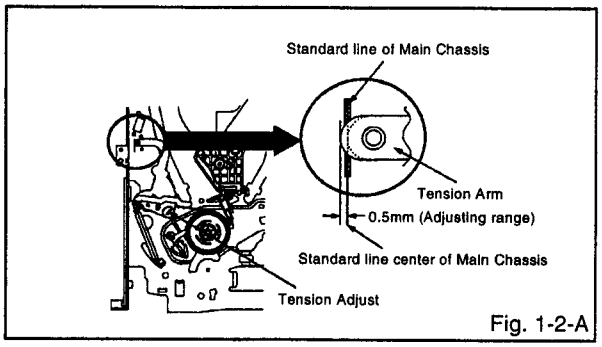


Fig. 1-2-A

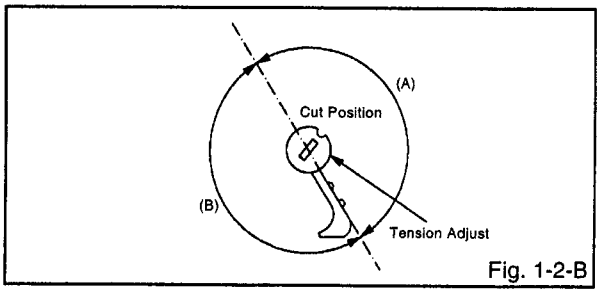


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (E-180) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3.** Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(JG100A)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(JG100A)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 60~110gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

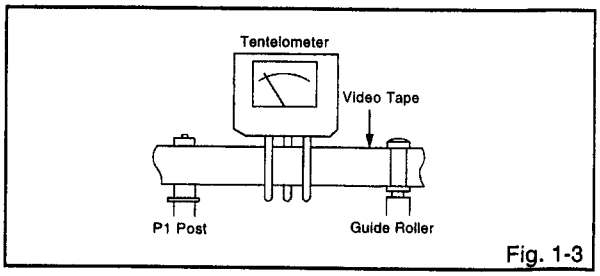
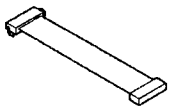


Fig. 1-3

SERVICING FIXTURES AND TOOLS

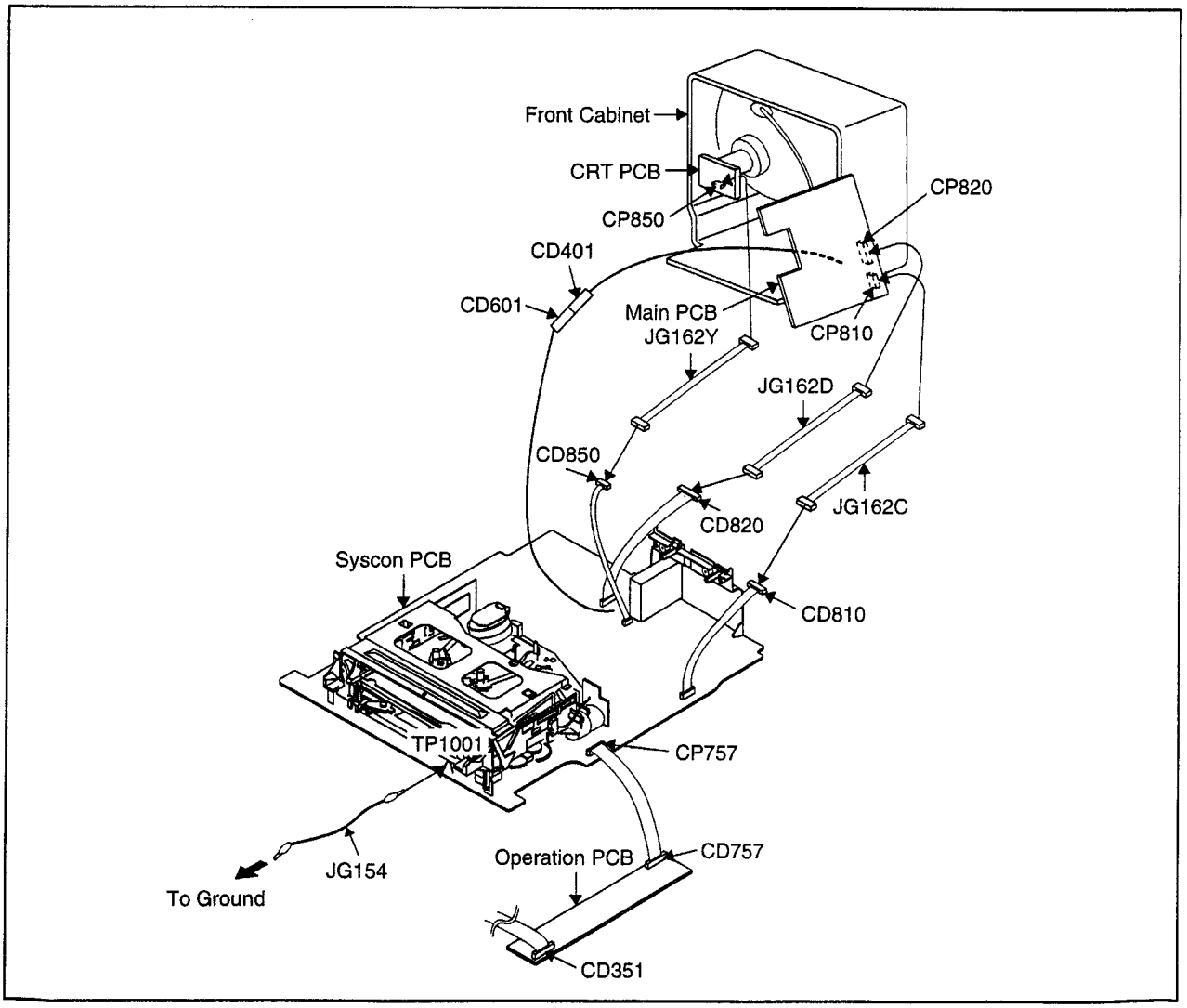
JG154 Cable	JG162C Cable (10 Pins) JG162D Cable (11 Pins) JG162Y Cable (5 Pins)
	

Part No.	Remarks
JG154	Used to connect the test point of SERVICE and GROUND
JG162C/JG162D	Used to connect the Syscon PCB and Main PCB
JG162Y	Used to connect the Syscon PCB and CRT PCB

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Unplug the connector CP351, CP757 and CP302 then remove the TV/VCR Block from the set.
2. Unplug the connector CP810, CP820 and CP850, then remove the Main PCB from the VCR Block.
3. Connect as shown in the below figure using the Service Fixture.
   - Connect the Syscon PCB to the Main PCB with the cable JG162C and JG162D.
   - Connect the Syscon PCB to the CRT PCB with the cable JG162Y.
4. Remove the Operation PCB from the set, then connect it with the Syscon PCB.
   If necessary, connect CP351.
5. Short circuit between **TP1001** and **Ground** with the cable JG154.
   (Refer to MAJOR COMPONENTS LOCATION GUIDE)
   The EOT, BOT and Reel Sensor do not work at this moment.
6. At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.



MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Operate within 4~5 seconds after the reel disk begins to turn.
2. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Rewind mode. **(Refer to Fig.1-4)**
3. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4)**

1. Set to the STOP mode.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4)**

1. Set to the STOP mode.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 45~70gf•cm.

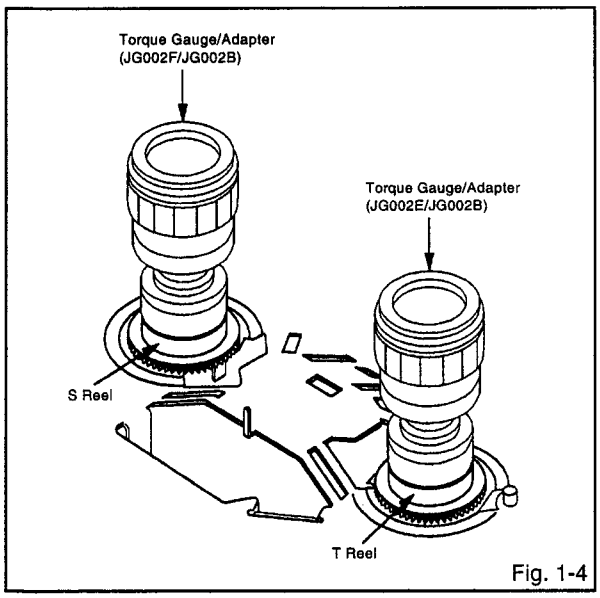


Fig. 1-4

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	T Brake Spring/Tension Spring

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape **(JG001C or JG001E)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
2. Connect CH-1 of the oscilloscope to **TP4002 (Envelope)** and CH-2 to **TP4001 (SW Pulse)**.
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. When observing the envelope, adjust the Adjusting Driver **(JG005)** slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. **(Refer to the ELECTRICAL ADJUSTMENTS)**

NOTE

After adjustment, confirm and adjust A/C head. **(Refer to item 2-2)**

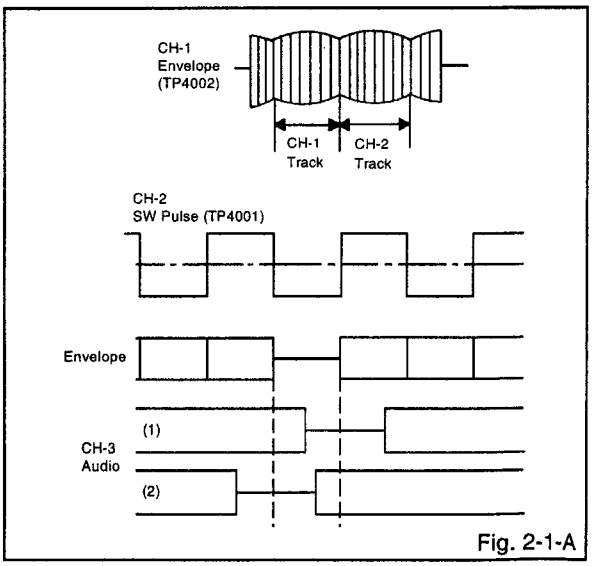


Fig. 2-1-A

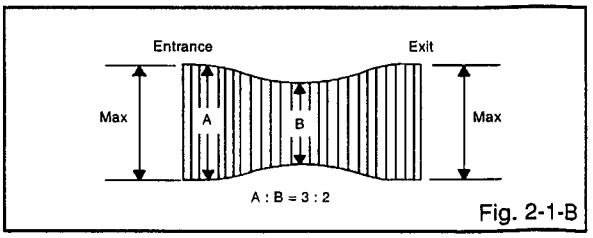


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape **(JG001C or JG001E)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A.**
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C.**
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

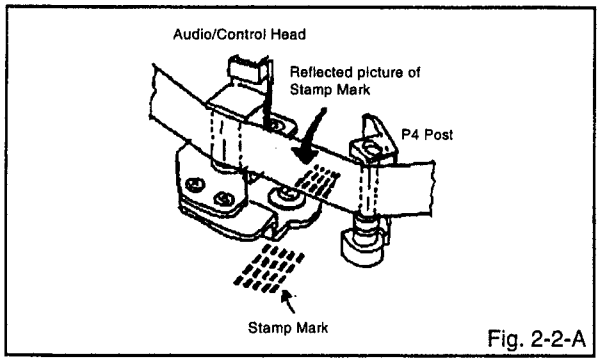


Fig. 2-2-A

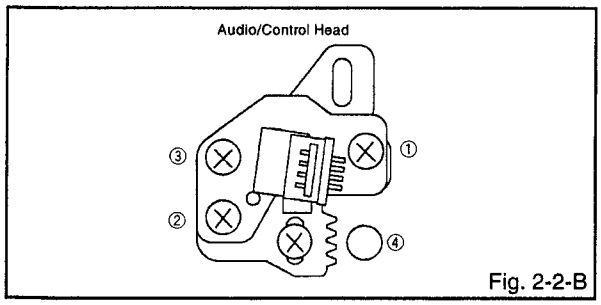


Fig. 2-2-B

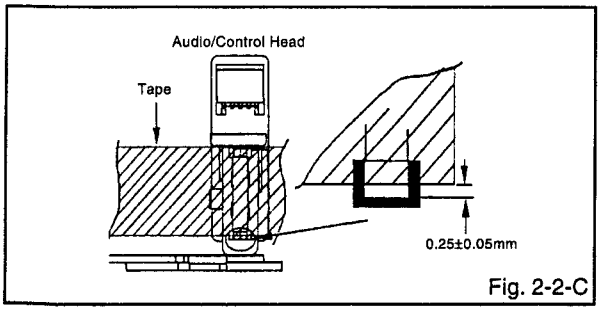


Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

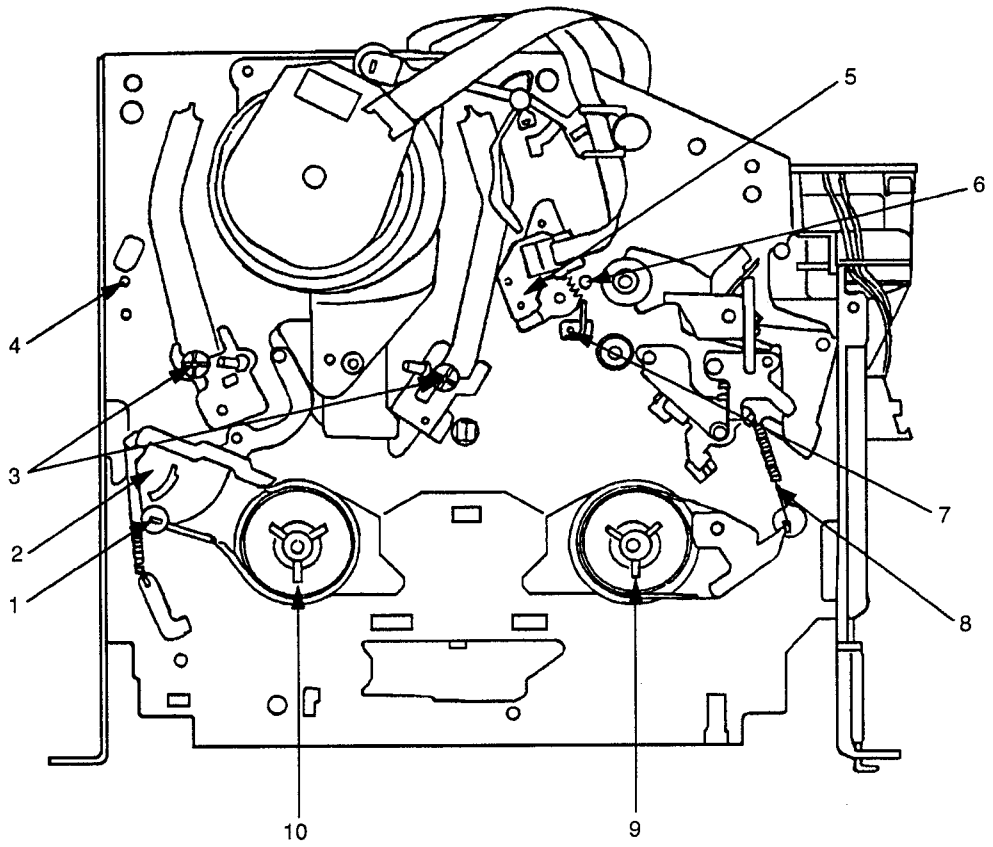
1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to Item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP4002**, CH-2 to **TP4001** and CH-3 to **HOT side of Audio Out Jack.**
6. Playback the VHS Alignment Tape **(JG001U or JG001V)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B.** Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-1-A.**

2-4: CONFIRM HI-FI AUDIO (Hi-Fi model only)

1. Connect CH-1 of the oscilloscope to **TP4002**, CH-2 to **TP4001** and CH-3 to the **HI-Fi Audio Out Jack.**
2. Playback the VHS Alignment Tape **(JG001R)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the Tracking Up button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
5. Press the Tracking Down button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
6. Confirm that the difference between these counted steps number in the above items are within 2 steps. If the difference are more than 3 steps, do Tape Running Adjustment again. **(Refer to Item 2-3)**

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Adjust
2. Tension Arm
3. Guide Roller
4. P1 Post
5. Audio/Control Head
6. X value adjustment driver hole
7. P4 Post
8. T Brake Spring
9. T Reel
10. S Reel

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

When replacing IC's or transistors, use only specified silicon grease **(YG6260M).**
(To prevent the damage to IC's and transistors.)

On-Screen Display Adjustment

1. Unplug the AC plug for more than 30 minutes to set the clock to the non-setting state.Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the channel button **(9)** on the remote control simultaneously to display adjustment mode on the screen as shown in **Fig. 1-1.**

NOTE

Use the channel buttons **(1-8)** on the remote control to select the options shown in **Fig. 1-1.**
Press the channel button **(0)** on the remote control to end the adjustments.

1. H/V
2. AKB
3. COLOR TEMP
4. PICTURE
5. OTHERS
6. TEST PATTERN
7. STEREO/SAP
8. (VOL TEST) 0. END

Fig. 1-1

2. BASIC ADJUSTMENTS (VCR SECTION)

2-1: PG SHIFTER

1. Connect CH-1 on the oscilloscope to **TP4001** and CH-2 to **TP4501.**
2. Playback the alignment tape. **(JG001E)**
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

5. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button **(4)** on the remote control simultaneously and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes 6.5 ± 0.5H.
   (Refer to Fig. 2-1-A, B)
7. Press the Tracking Auto button.

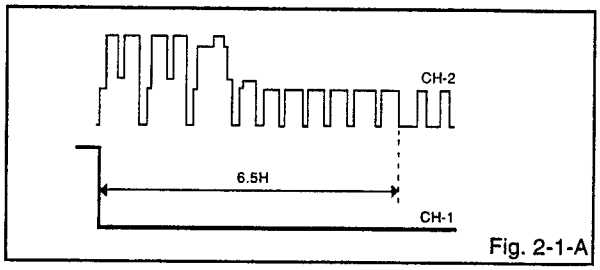


Fig. 2-1-A

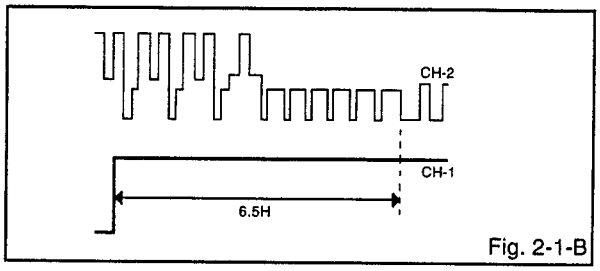


Fig. 2-1-B

2-2: RF AGC DELAY

1. Receive the monoscope pattern.
2. Connect the digital voltmeter between the **pin 5 of CP603** and the **pin 1 (GND) of CP603.**
3. Activate the adjustment mode display of **Fig. 2-1** and press the channel button **(5)** on the remote control. The **Fig. 2-2** appears on the display.
4. Press the channel button **(1)** on the remote control.
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 1.5 ± 0.05V (80dB).

1. RF AGC DELAY
2. VIDEO LEVEL
3. FM LEVEL
4. OSD H
5. CUT OFF
6.
7.
8. 0. RETURN

Fig. 2-2

2-3: VCO FREERUN

1. Connect the oscillator to **pin 11 of TU601.**
2. Connect the digital voltmeter to **pin 47 of IC601.**
3. Adjust the **L608** until the digital voltmeter is 3.8 ± 0.05V.

(TV SECTION)

2-4: CONSTANT VOLTAGE

1. Using the remote control, set the brightness and contrast to normal position.
2. Connect the digital voltmeter to **TP401.**
3. Set condition is AV MODE without signal.
4. Adjust the **VR502** until the DC voltage is DC 130 ± 0.5V.

ELECTRICAL ADJUSTMENTS

2-5: CUT OFF

1. Place the set with Aging Test for more than 15 minutes.
2. Set condition is AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 2-1** and press the channel button **(5)** on the remote control. The **Fig. 2-2** appears on the display.
5. Press the channel button **(5)** on the remote control.
6. Adjust the **Screen Volume** until a dim raster is obtained.

2-6: FOCUS

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Turn the Focus Volume fully counterclockwise once.
4. Adjust the **Focus Volume** until picture is distinct.

2-7: SUB BRIGHTNESS (TV)

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control. The **Fig. 2-3** appears on the display.
4. Press the channel button **(1)** on the remote control.
5. Press the VOL. UP/DOWN button on the remote control until the white 25% is starting to be visible.

1. BRIGHT
2. CONTRAST
3. COLOR
4. TINT
5. SHARPNESS
6. OSD CONT
7.
8. 0. RETURN

Fig. 2-3

2-8: SUB BRIGHTNESS (AV)

1. Receive the monoscope pattern. (Audio Video Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control. The **Fig. 2-3** appears on the display.
4. Press the channel button **(1)** on the remote control.
5. Press the VOL. UP/DOWN button on the remote control until the white 25% is starting to be visible.

2-9: SUB COLOR (TV)

1. Receive the color bar pattern. (RF Input)
2. Connect the synchro scope to **TP801**.
3. Using the remote control, set the brightness, contrast, color and tint to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control. The **Fig. 2-3** appears on the display.
5. Press the channel button **(3)** on the remote control.
6. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 divisions on the screen of the oscilloscope.
7. Press the VOL. UP/DOWN button on the remote control until the red level is set to the 4 divisions. **(Refer to Fig. 2-4)**

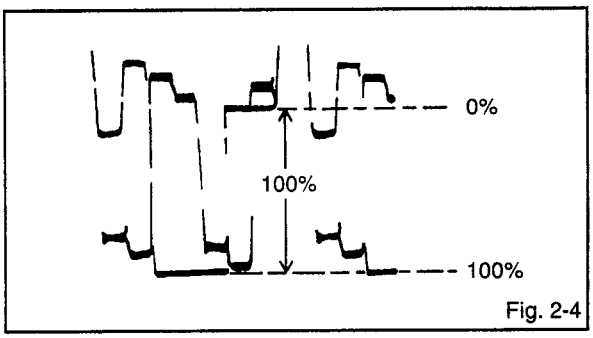


Fig. 2-4

2-10: SUB COLOR (AV)

1. Receive the rainbow pattern. (Audio Video Input)
2. Connect the synchro scope to **TP801**.
3. Using the remote control, set the brightness, contrast, color and tint to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control. The **Fig. 2-3** appears on the display.
5. Press the channel button **(3)** on the remote control.
6. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 divisions on the screen of the oscilloscope.
7. Press the VOL. UP/DOWN button on the remote control until the red level is set to the 4 divisions. **(Refer to Fig. 2-4)**

2-11: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control. The **Fig. 2-5** appears on the display.
4. Press the channel button **(1)** on the remote control.
5. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

ELECTRICAL ADJUSTMENTS

1. H. PHASE
2. H. BLK
3. V. SIZE
4. V. POSI
5. V. LIN
6. V. SC
7. V. COMP
8. (H FREQ) 0. RETURN

Fig. 2-5

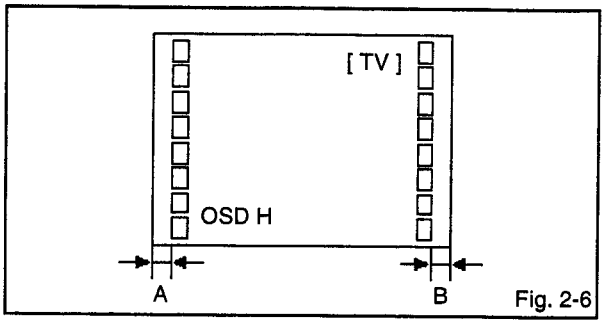


Fig. 2-6

2-12: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control. The **Fig. 2-5** appears on the display.
4. Press the channel button **(3)** on the remote control.
5. Press the VOL. UP/DOWN button on the remote control until the horizontal over scan is equal to the vertical over scan.

2-13: VERTICAL LINEARITY

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control. The **Fig. 2-5** appears on the display.
4. Press the channel button **(5)** on the remote control.
5. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-14: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 2-1** and press the channel button **(1)** on the remote control. The **Fig. 2-5** appears on the display.
4. Press the channel button **(4)** on the remote control.
5. Press the VOL. UP/DOWN button on the remote control until the horizontal line of the color bar comes to approximate center of the CRT.

2-15: OSD HORIZONTAL

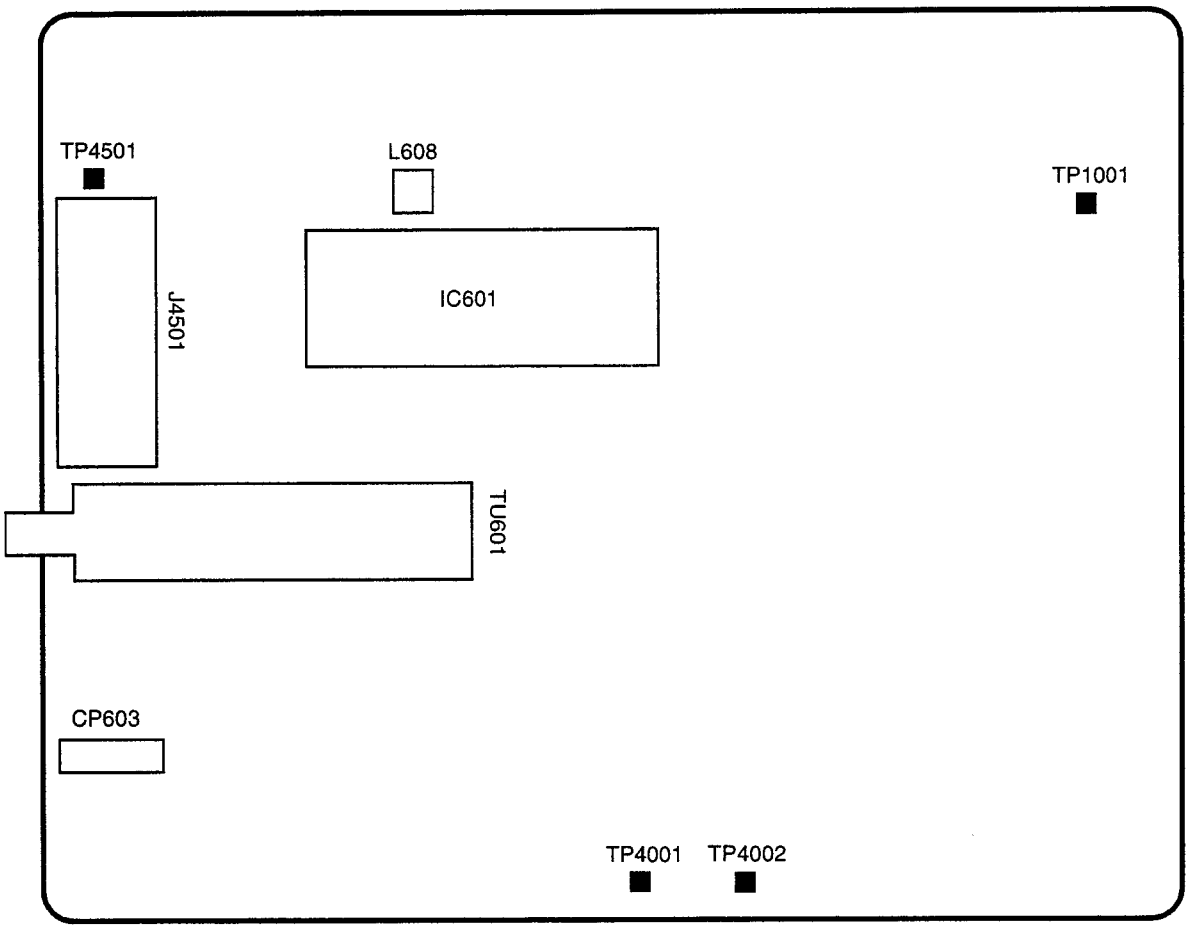
1. Receive monoscope pattern.
2. Using the remote control, set brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control. The **Fig. 2-2** appears on the display.
4. Press the channel button **(4)** on the remote control.
5. Press the VOL. UP/DOWN on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-6)**

2-16: VERTICAL LINEA 60 (AV)

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control. The **Fig. 2-5** appears on the display.
4. Press the channel button **(5)** on the remote control.
5. Press the VOL. UP/DOWN button on the remote control until the horizontal line of the color bar comes to approximate center of the CRT.

ELECTRICAL ADJUSTMENTS

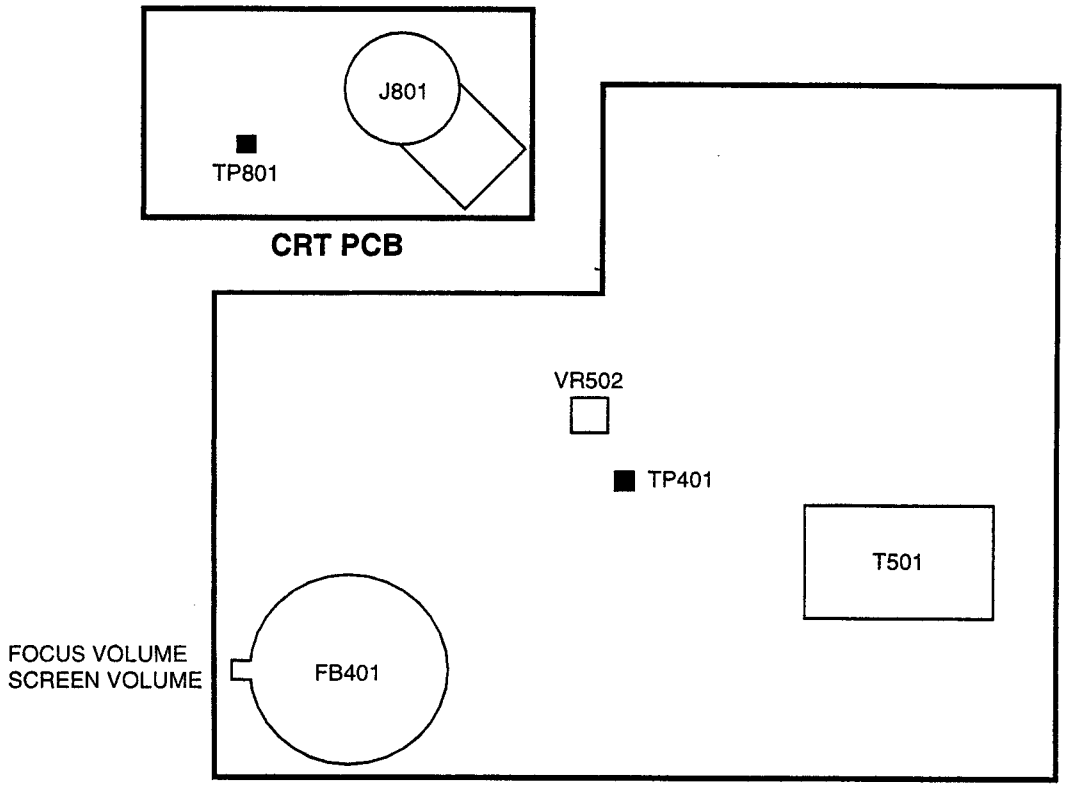
3. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (VCR SECTION)



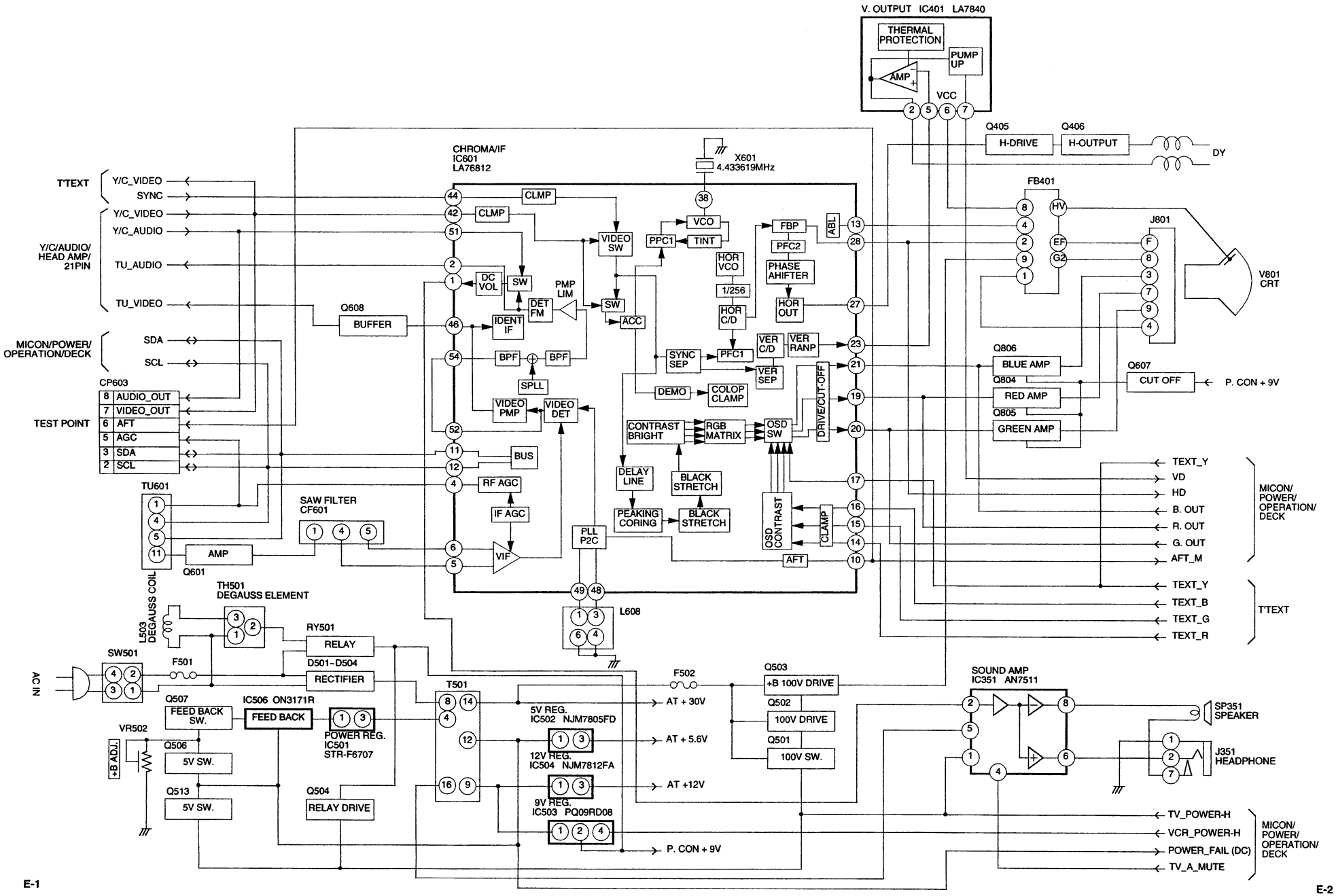
SYSCON PCB

ELECTRICAL ADJUSTMENTS

(TV SECTION)



TV BLOCK DIAGRAM



ELECTRICAL ADJUSTMENTS

4. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

4-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 4-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

4-2: PURITY

NOTE

Adjust after performing adjustments in section 4-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

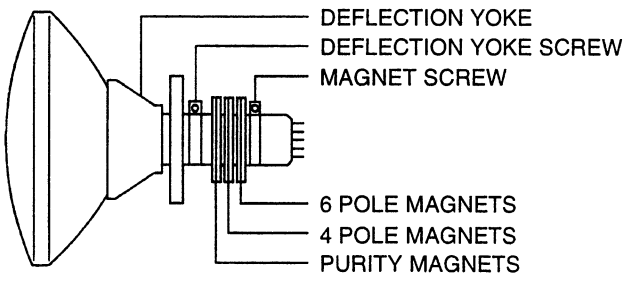


Fig. 4-1

4-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 4-2.

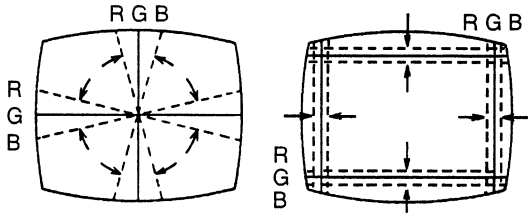
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

4-4: DYNAMIC CONVERGENCE

NOTE

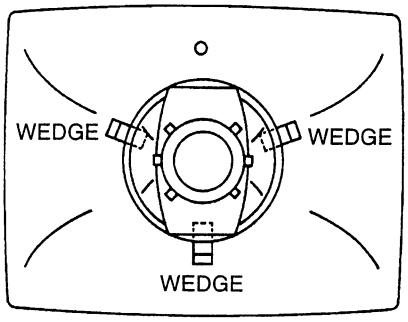
Adjust after performing adjustments in section 4-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 4-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 4-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

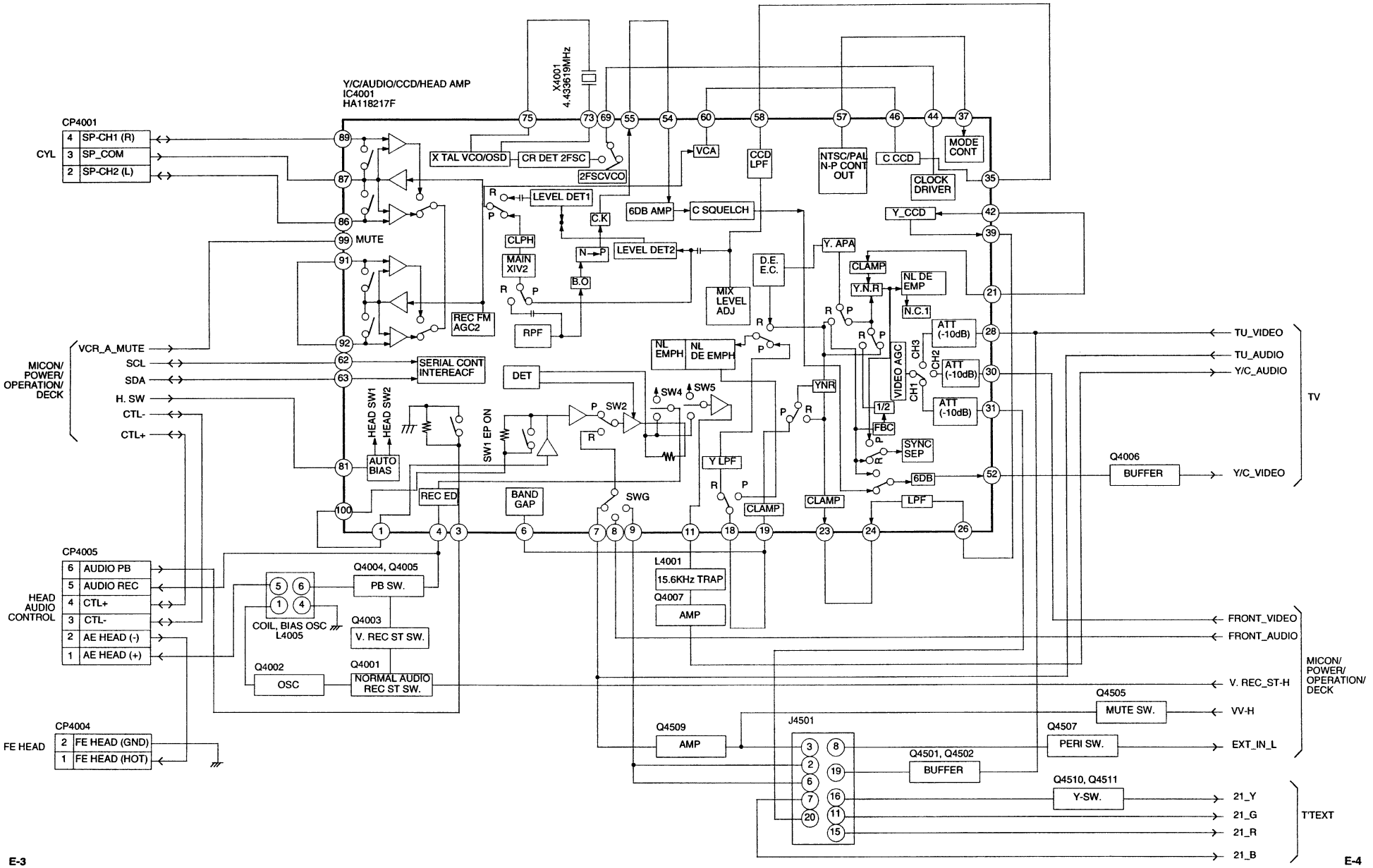
Fig. 4-2-a



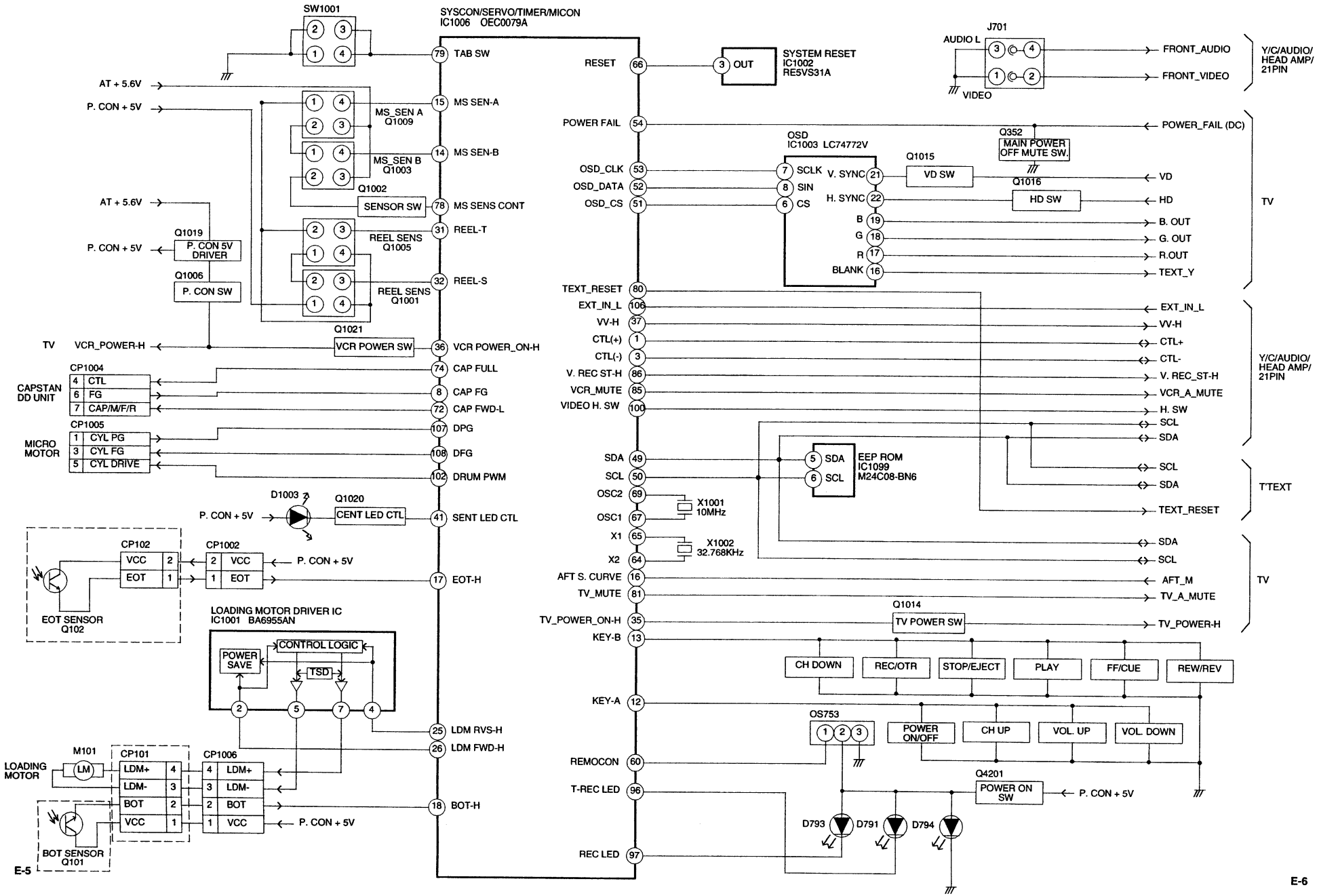
WEDGE POSITION

Fig. 4-2-b

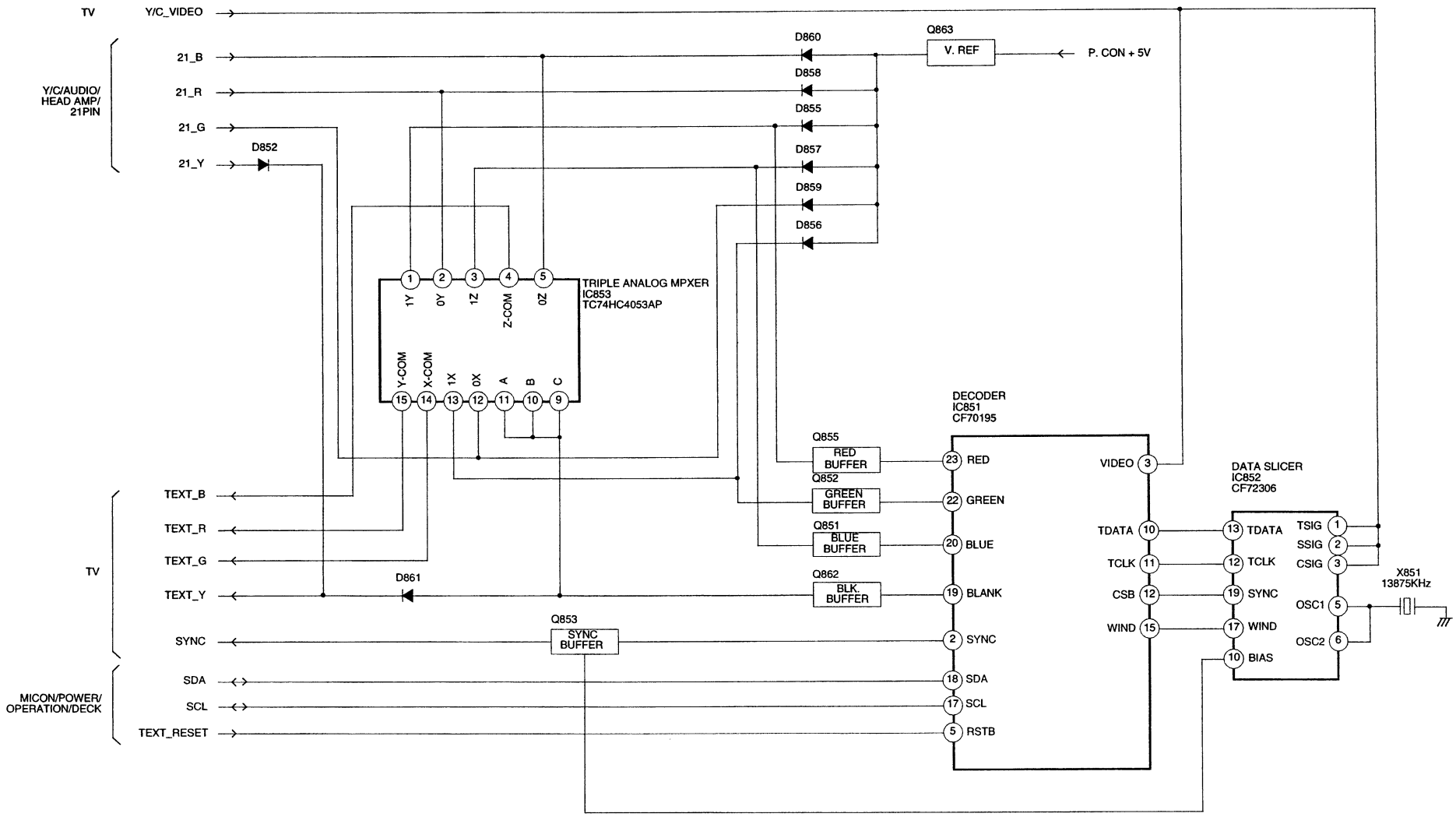
Y/C/AUDIO/HEAD AMP/21PIN BLOCK DIAGRAM



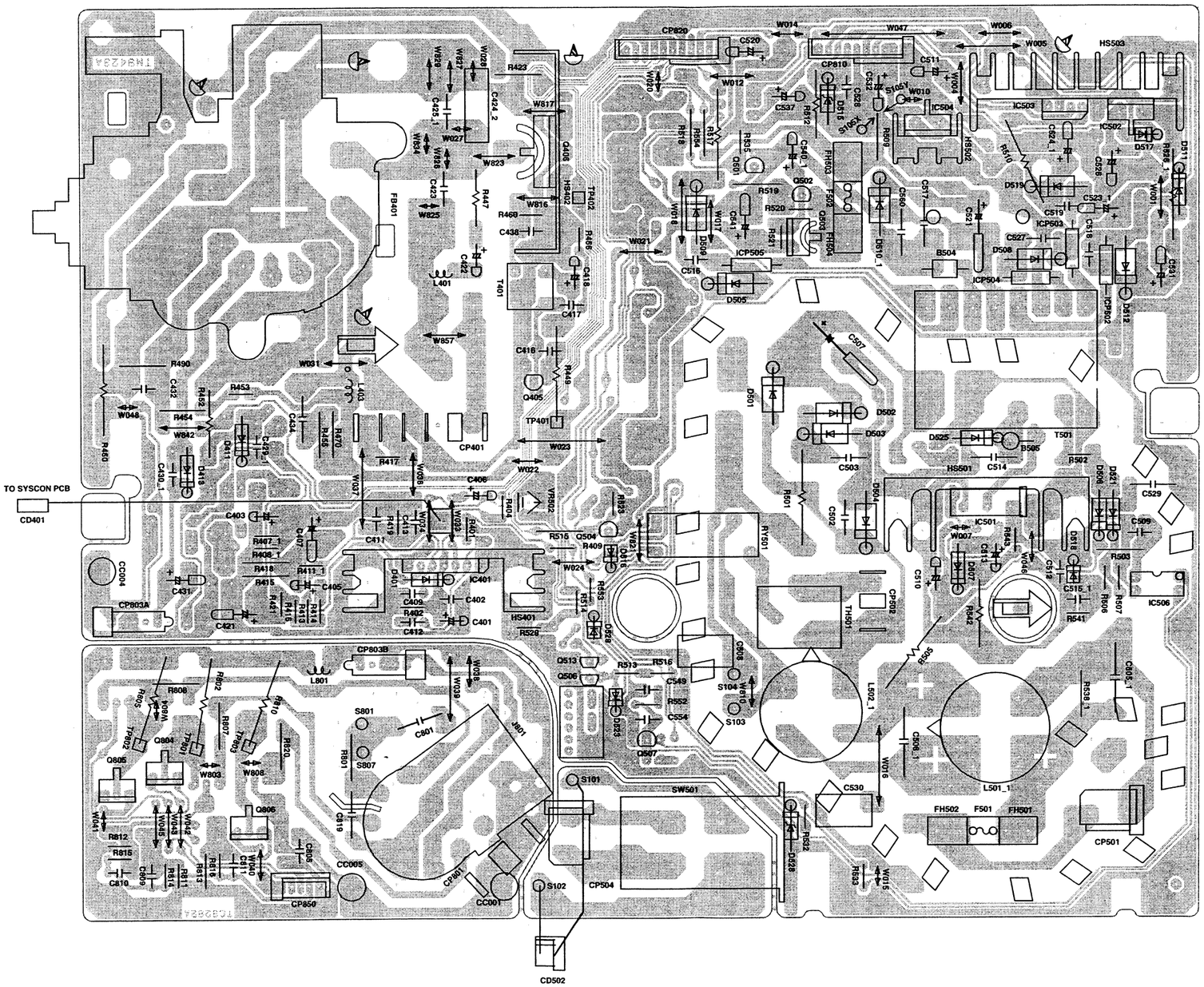
MICON/POWER/OPERATION/DECK BLOCK DIAGRAM



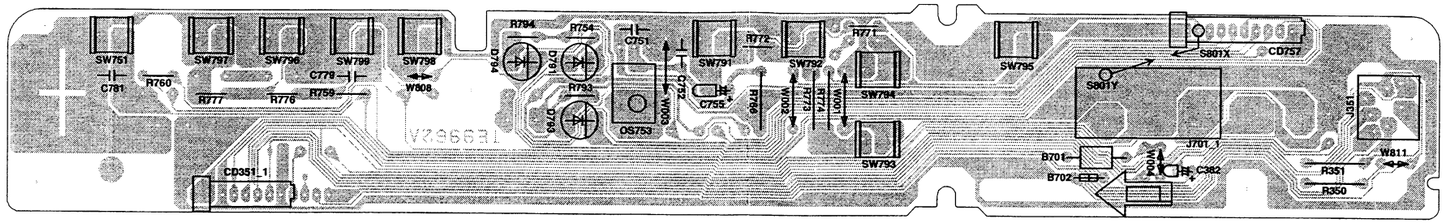
T'TEXT BLOCK DIAGRAM



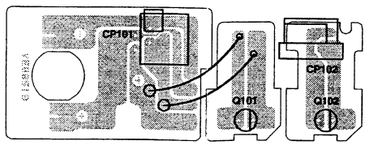
PRINTED CIRCUIT BOARDS
MAIN/CRT/POWER SW.
SOLDER SIDE



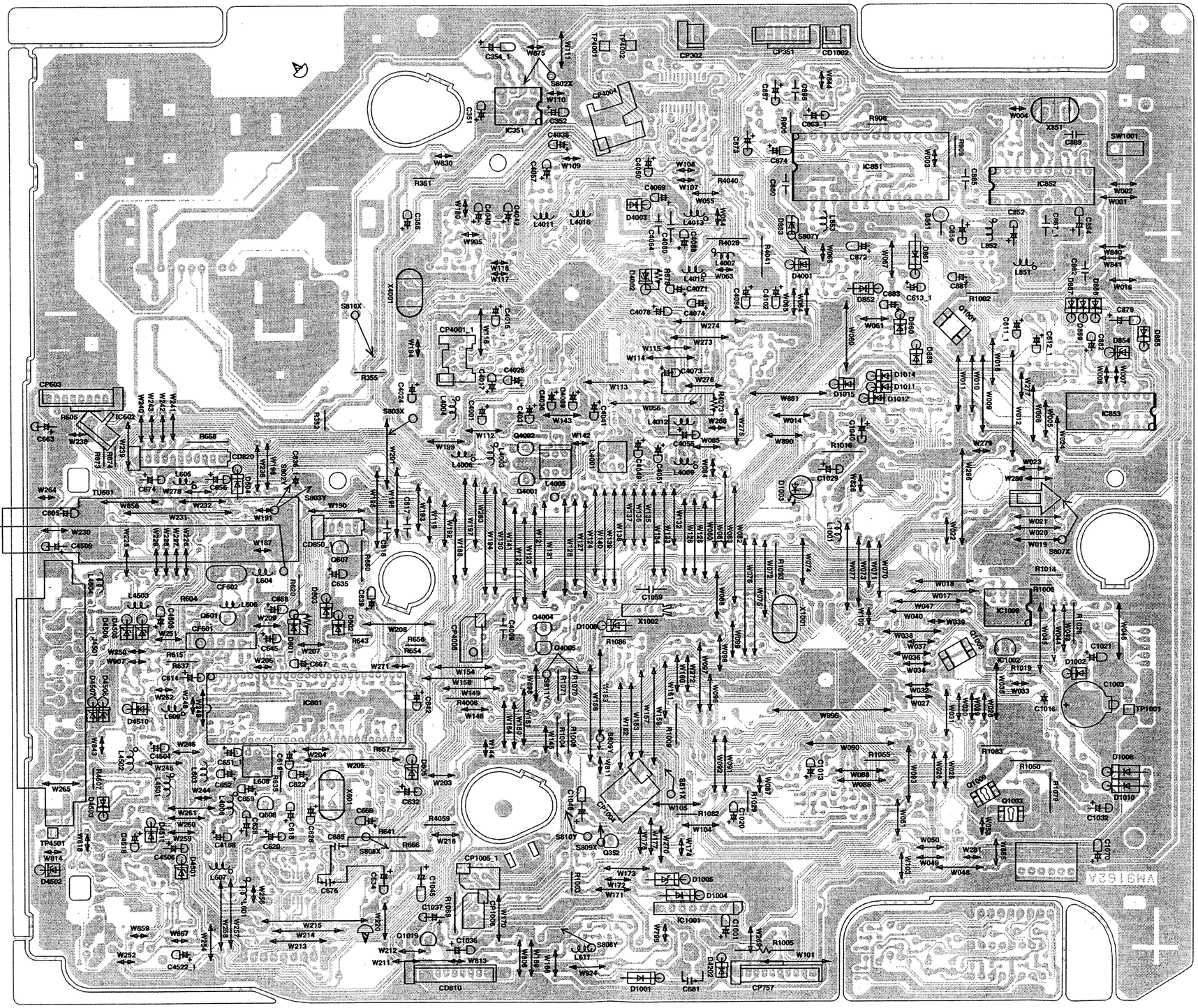
OPERATION
SOLDER SIDE



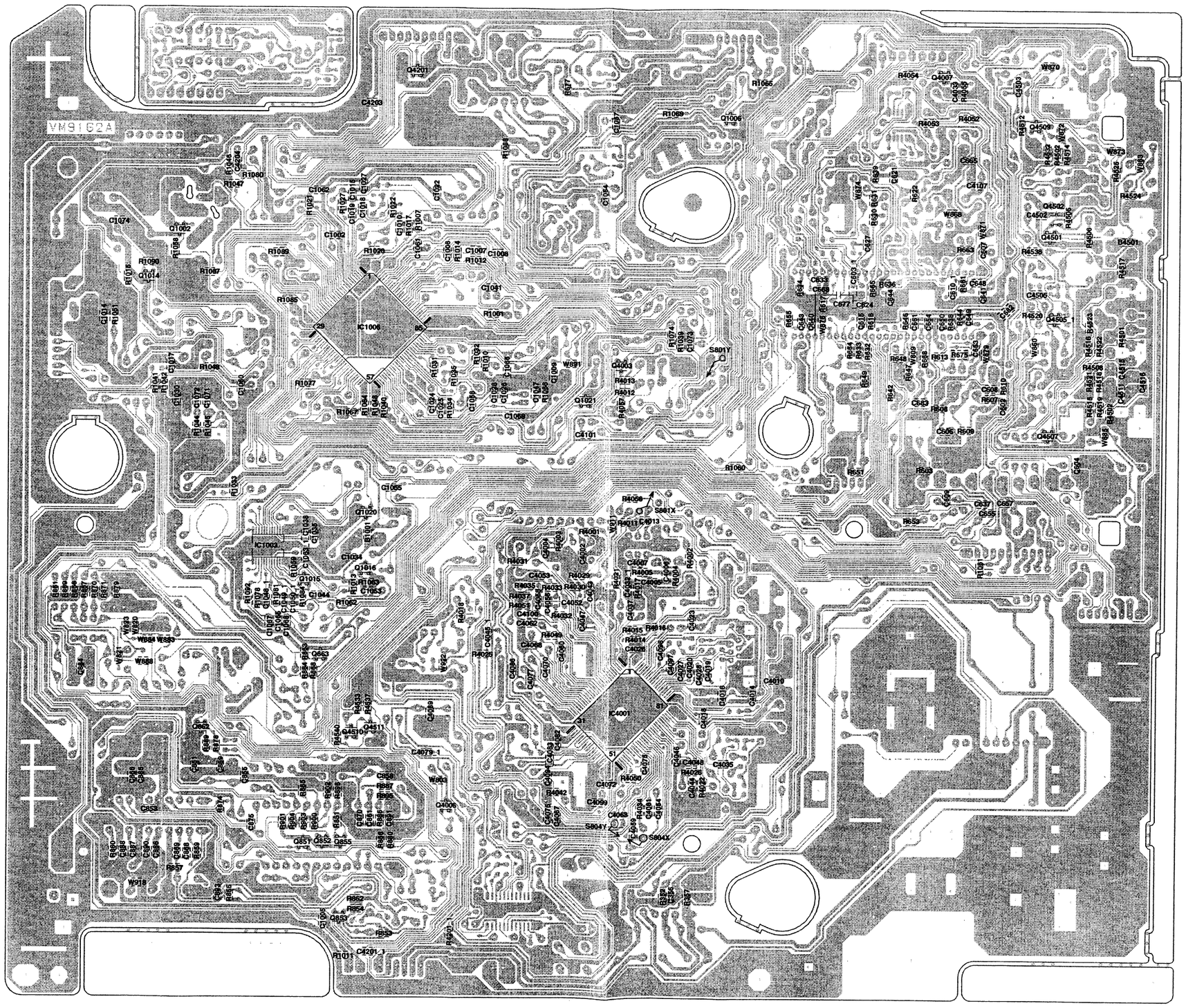
DECK
SOLDER SIDE



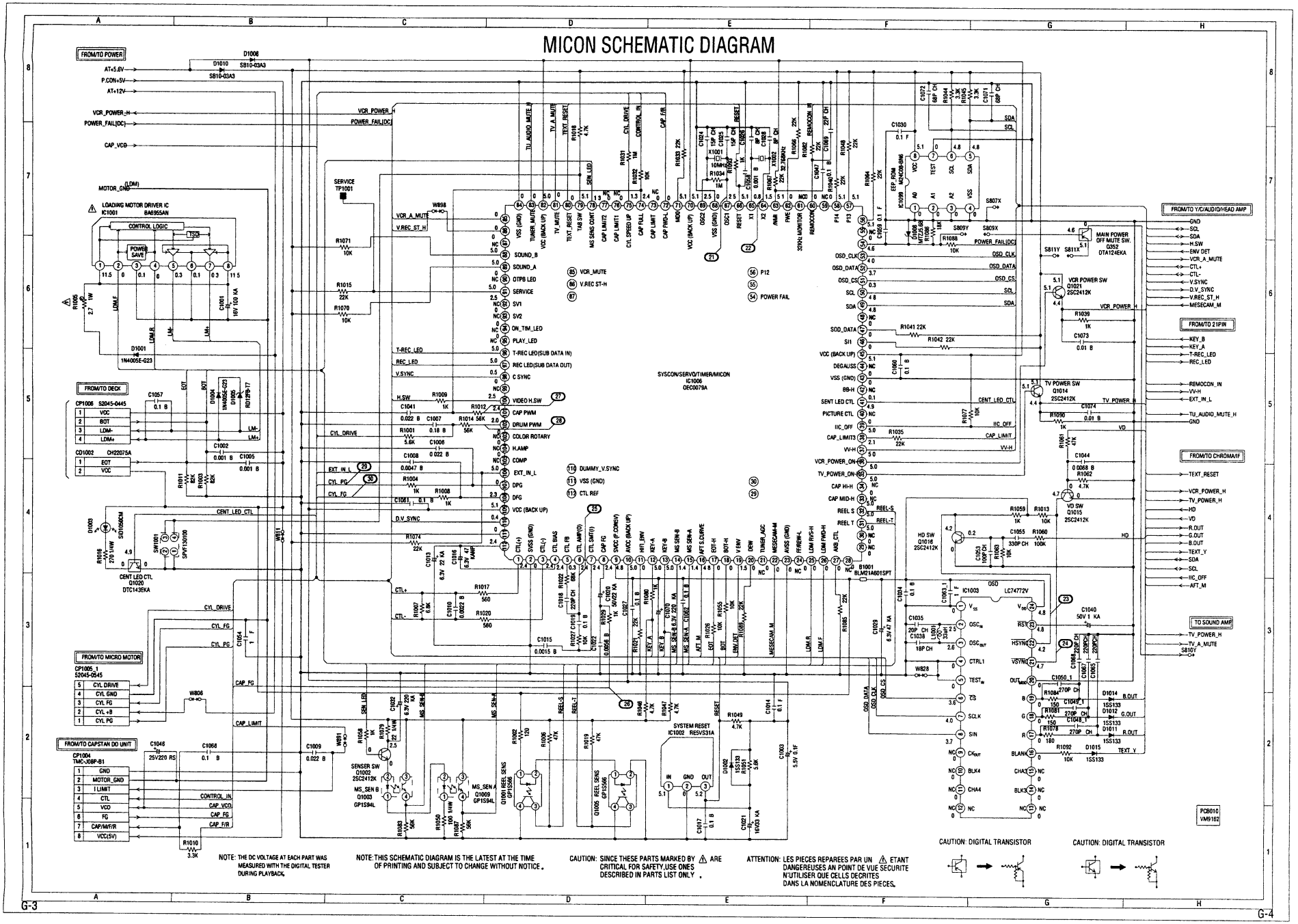
PRINTED CIRCUIT BOARDS
SYSCON (INSERTED PARTS)
SOLDER SIDE



PRINTED CIRCUIT BOARDS
SYSCON (CHIP MOUNTED PARTS)
SOLDER SIDE



MICON SCHEMATIC DIAGRAM



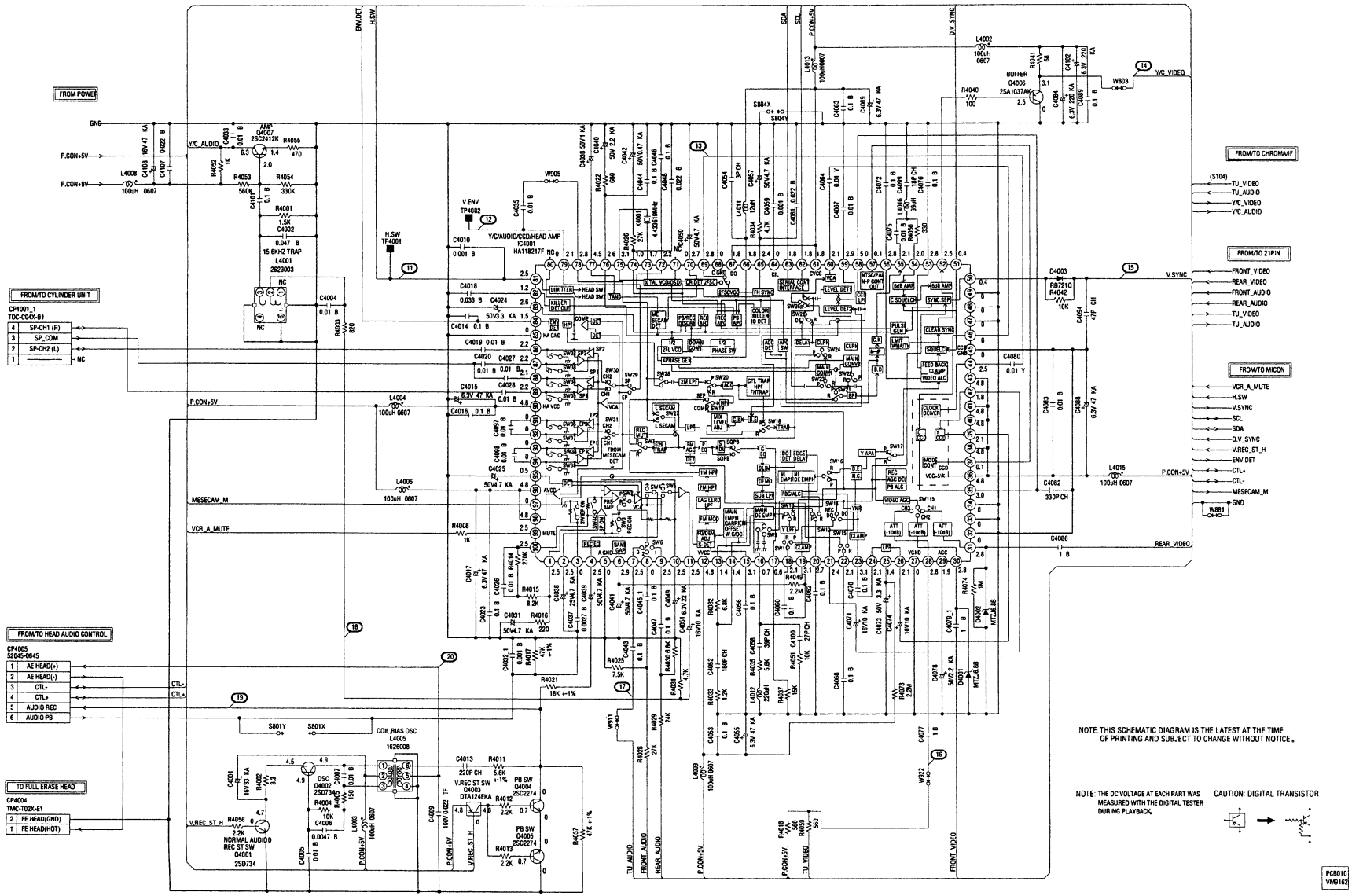
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

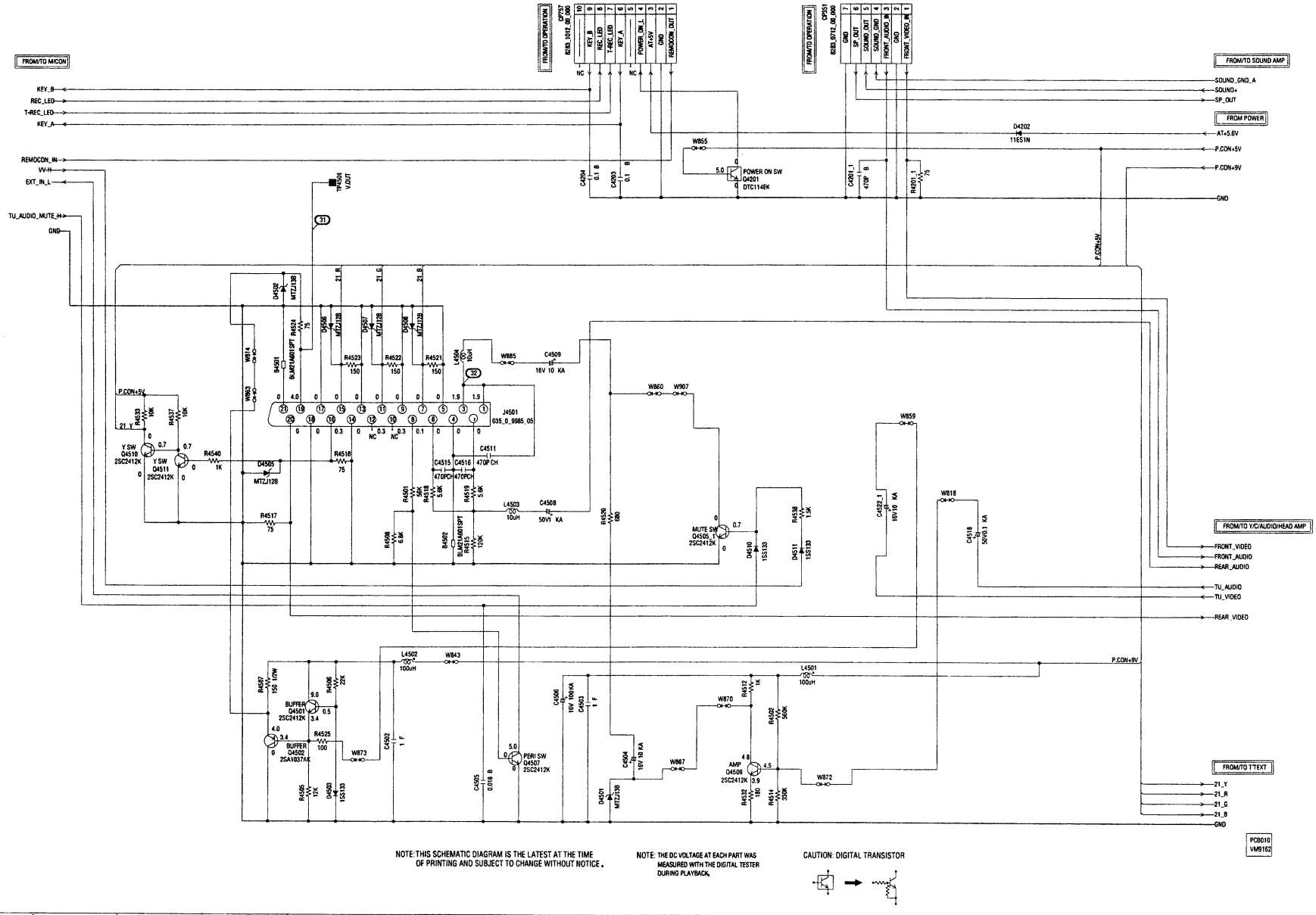
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

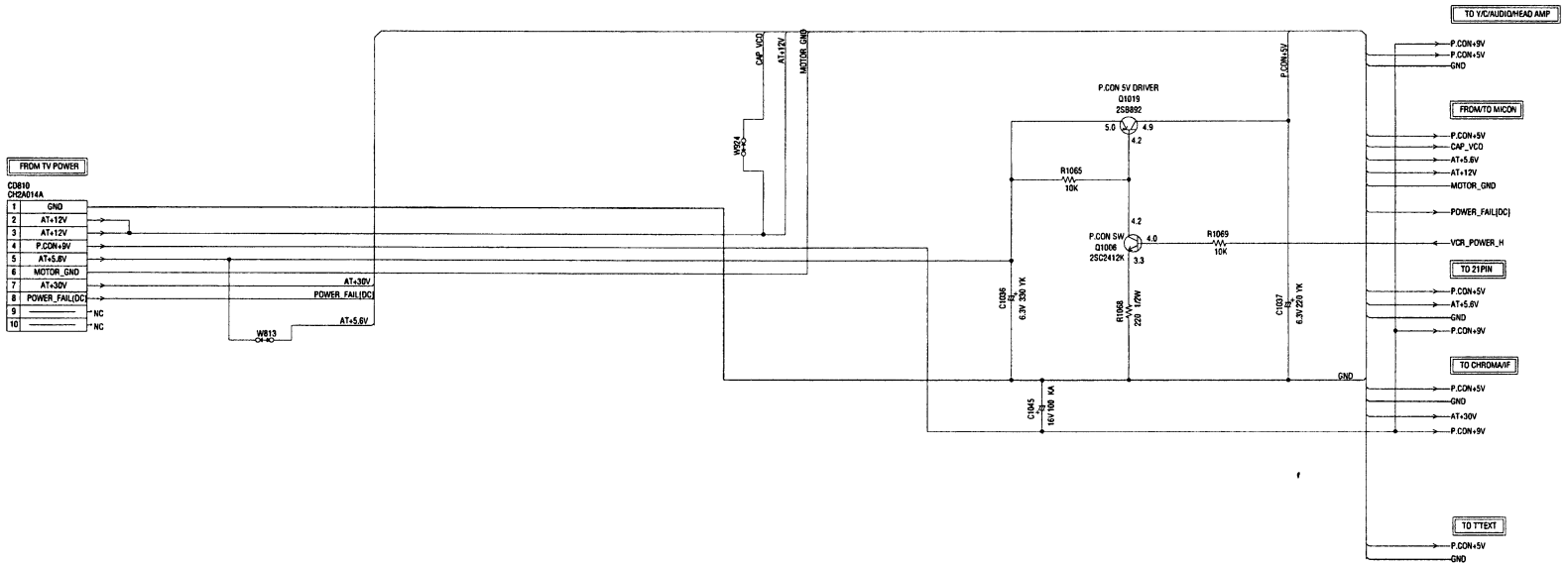
Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM



21PIN SCHEMATIC DIAGRAM



POWER SCHEMATIC DIAGRAM

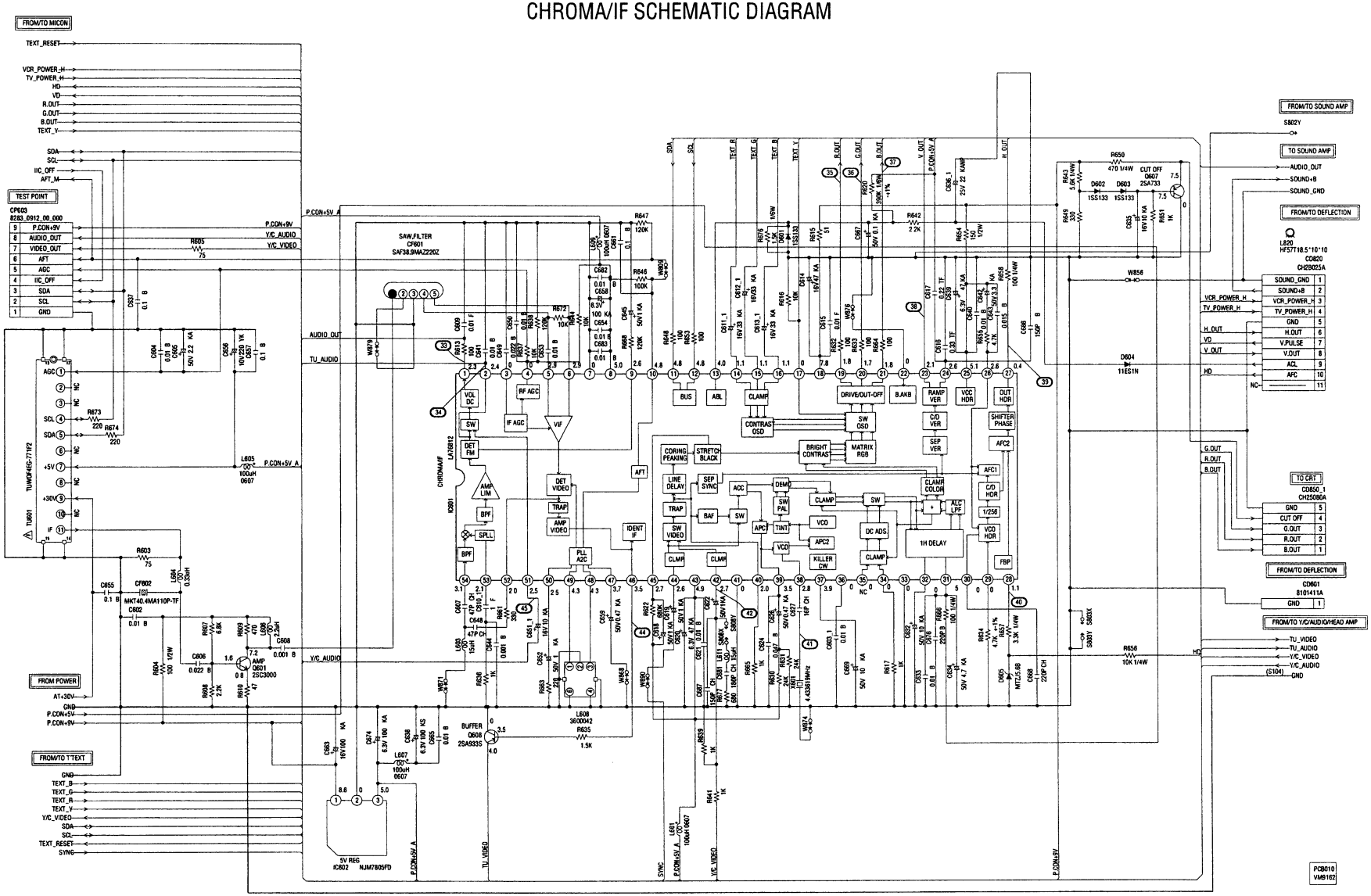


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PCB010
VM9162

CHROMA/IF SCHEMATIC DIAGRAM



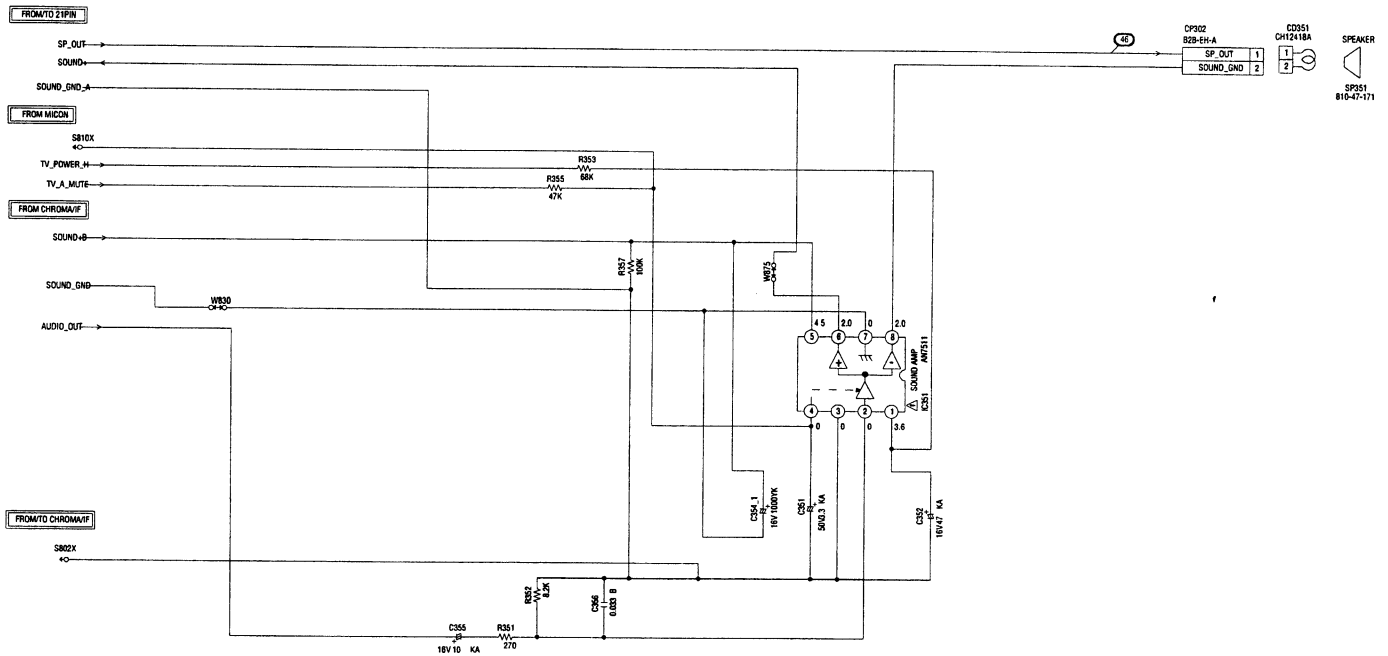
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY .

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

SOUND AMP SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY .

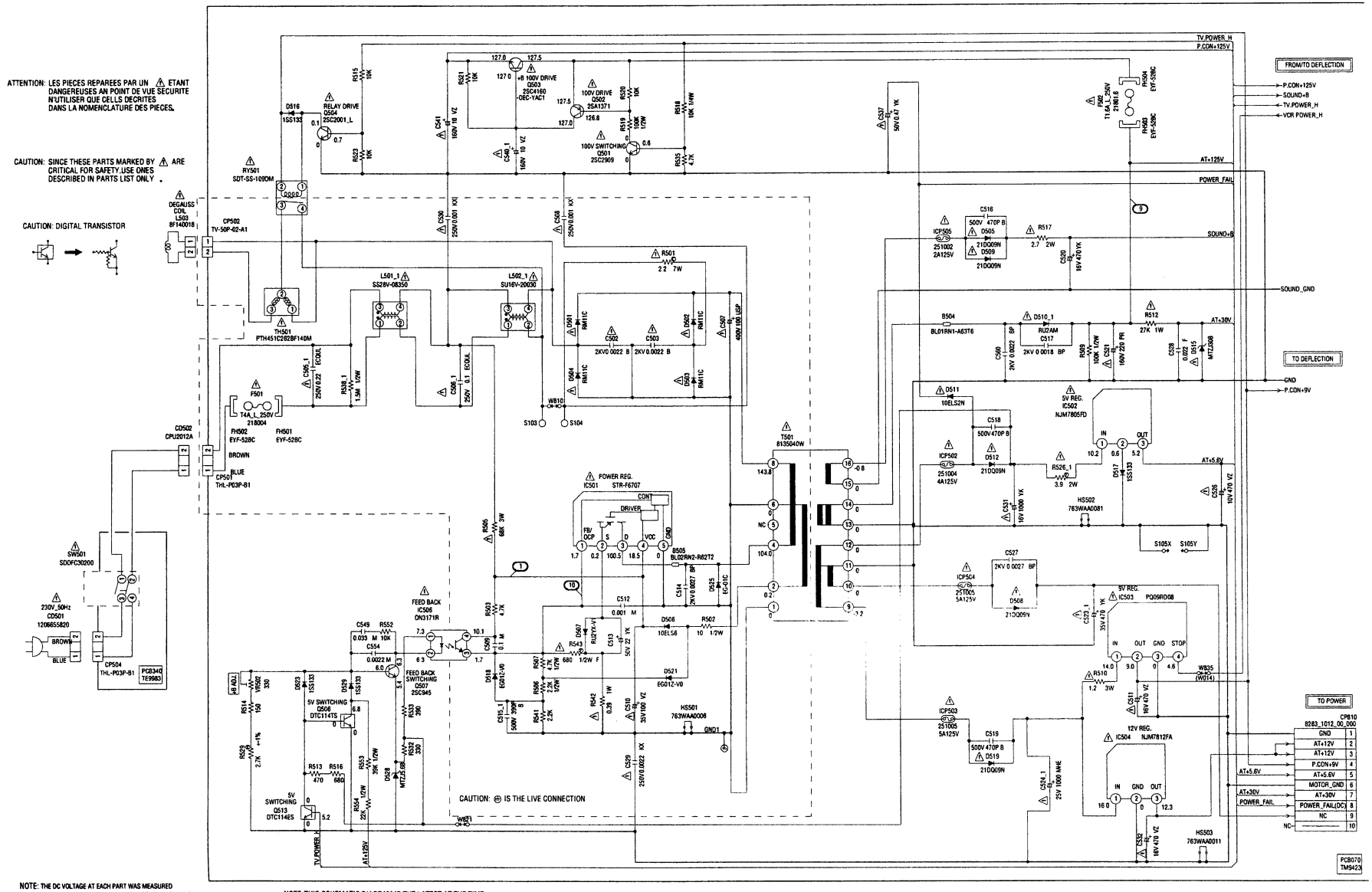
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

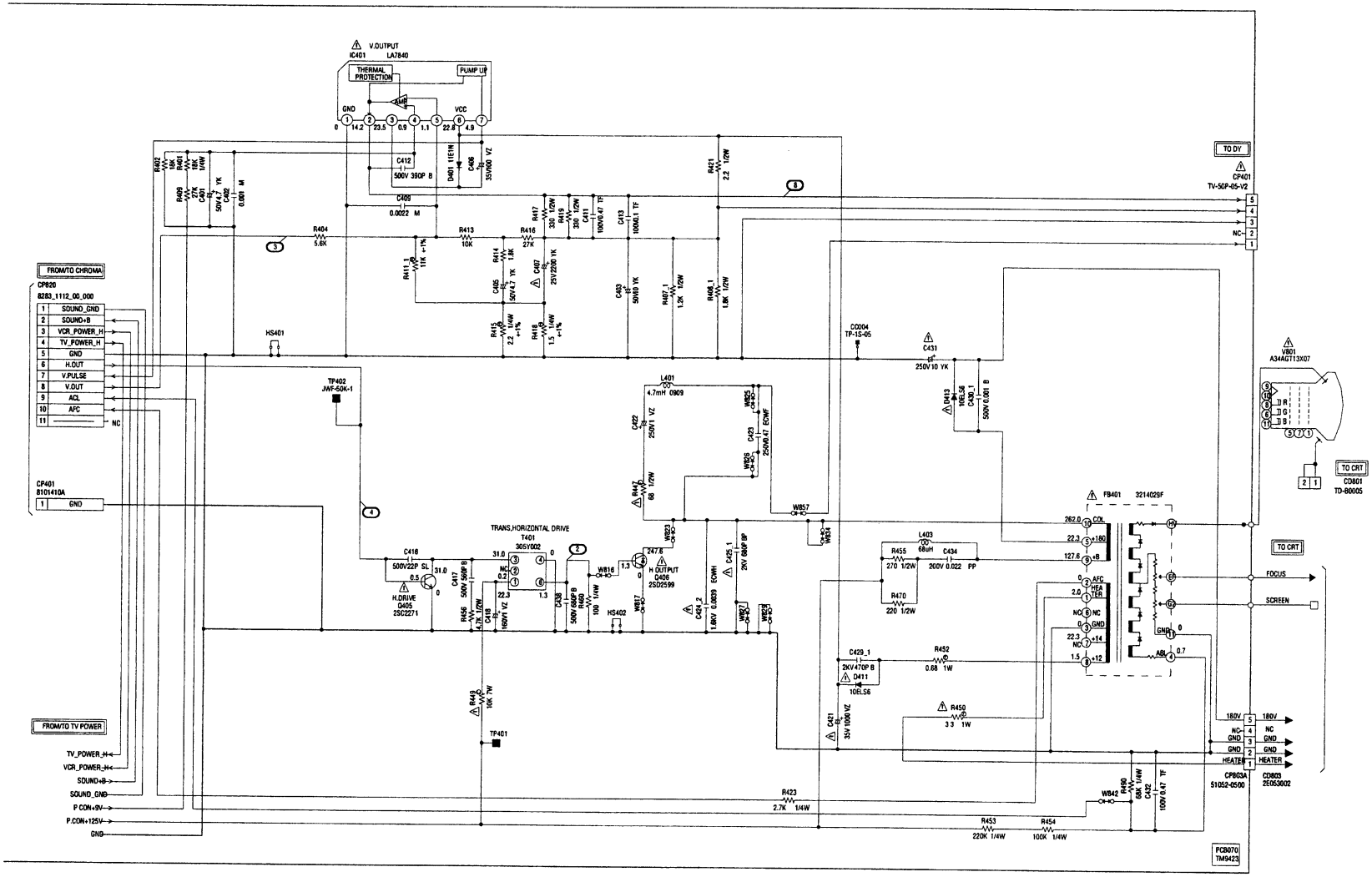
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB010 VM9162

TV POWER SCHEMATIC DIAGRAM


ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY.USE ONES DESCRIBED IN PARTS LIST ONLY .
CAUTION: DIGITAL TRANSISTOR
FROM/TO DEFLECTION
TO DEFLECTION
TO POWER
TV.POWER_H
P.CON+125V
SOUND+B
VCR POWER_H
AT+125V
POWER_FAIL
SOUND_GND
AT+30V
GND
P.CON+9V
AT+5.6V
MOTOR_GND
NC
CAUTION: ⓗ IS THE LIVE CONNECTION
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
PCB070 TM9423
PCB346 TE9983

DEFLECTION SCHEMATIC DIAGRAM



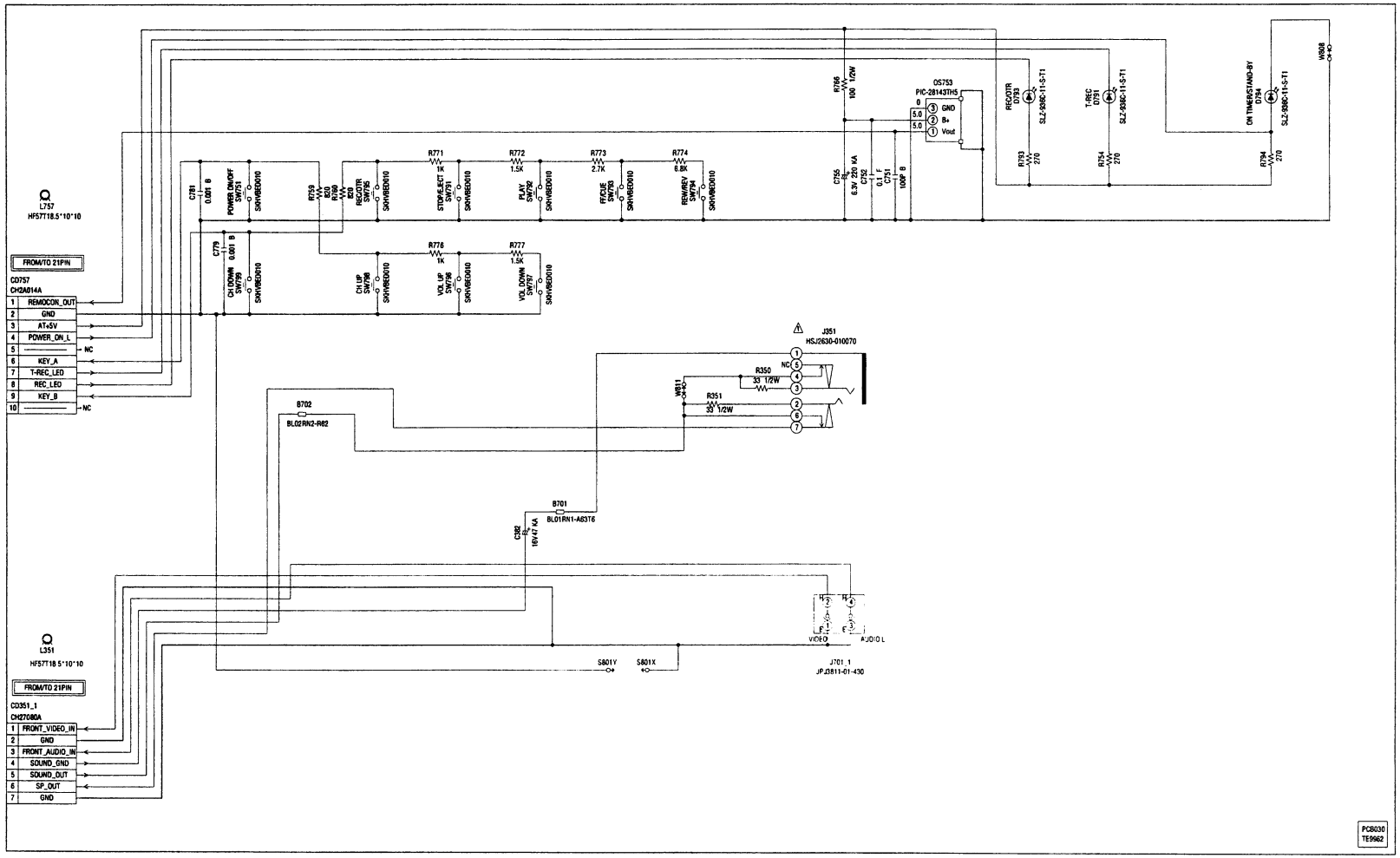
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

OPERATION SCHEMATIC DIAGRAM



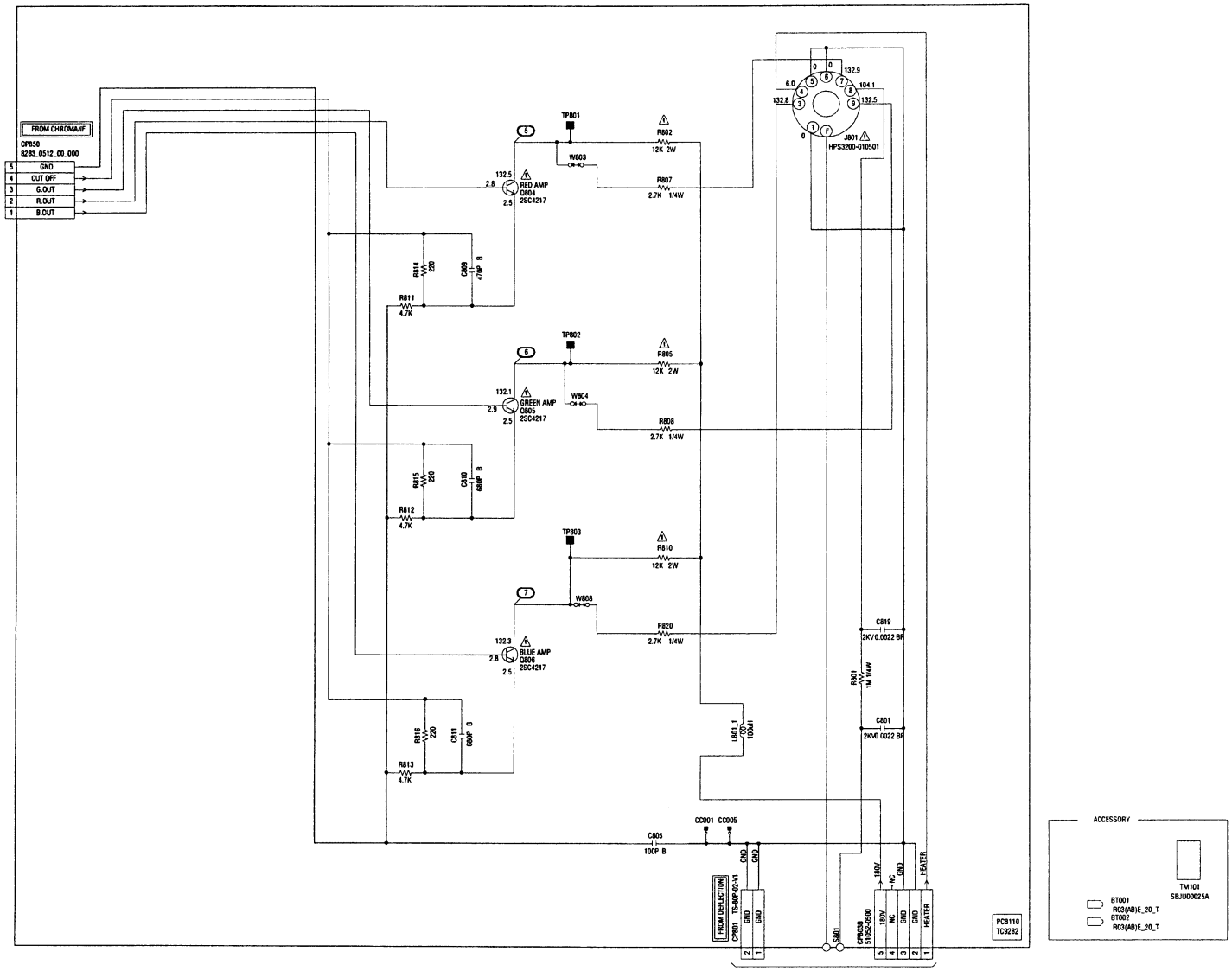
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CRT SCHEMATIC DIAGRAM



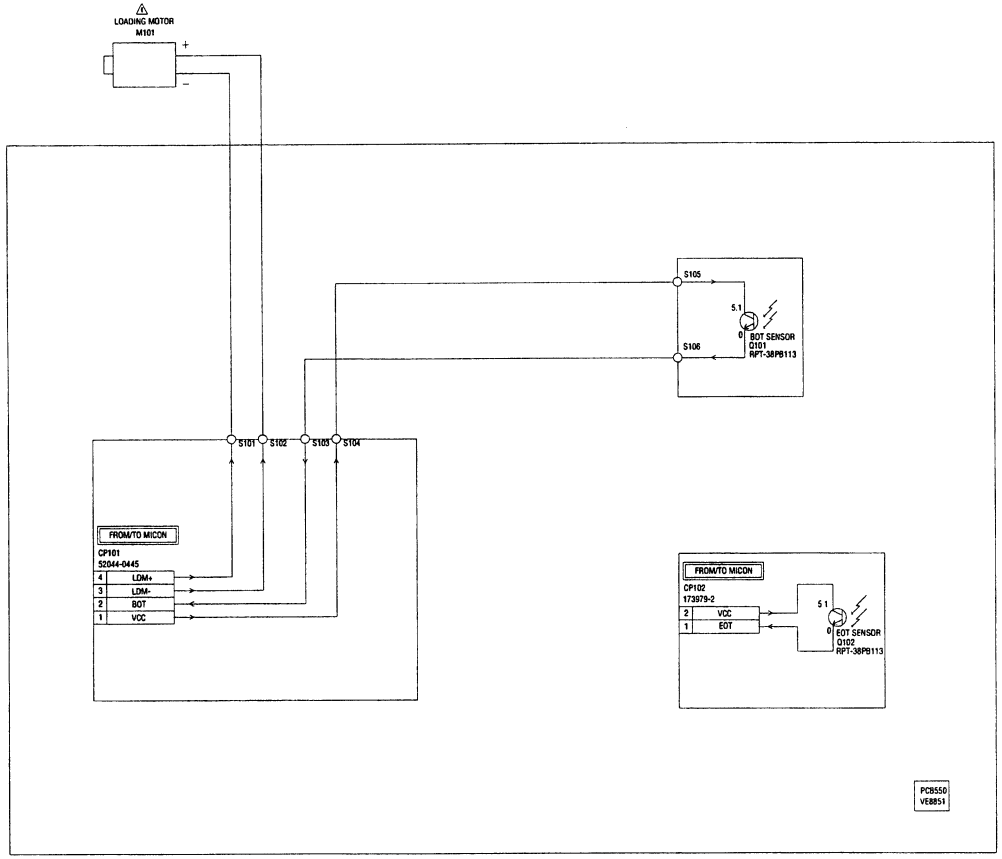
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

DECK SCHEMATIC DIAGRAM



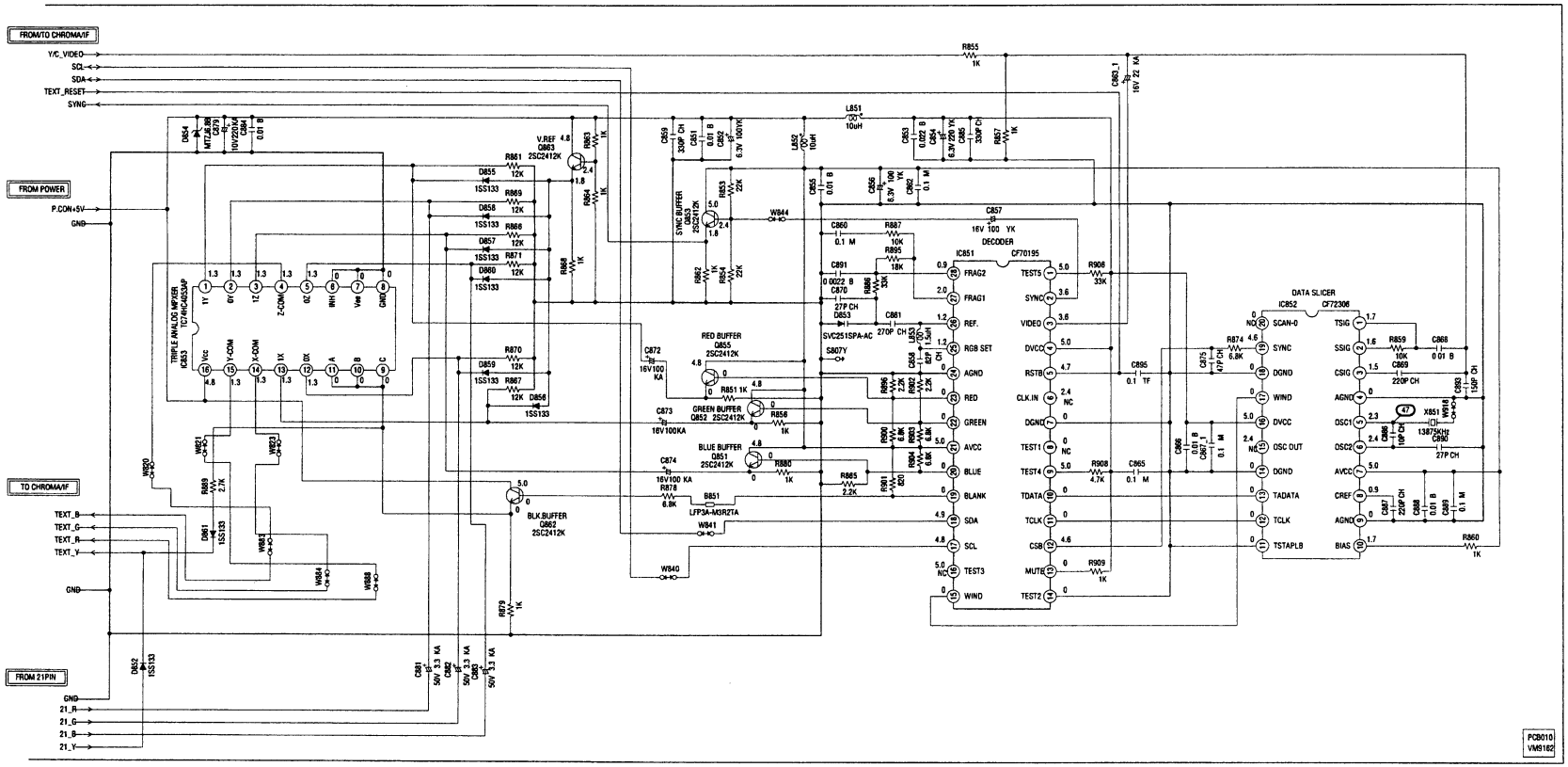
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

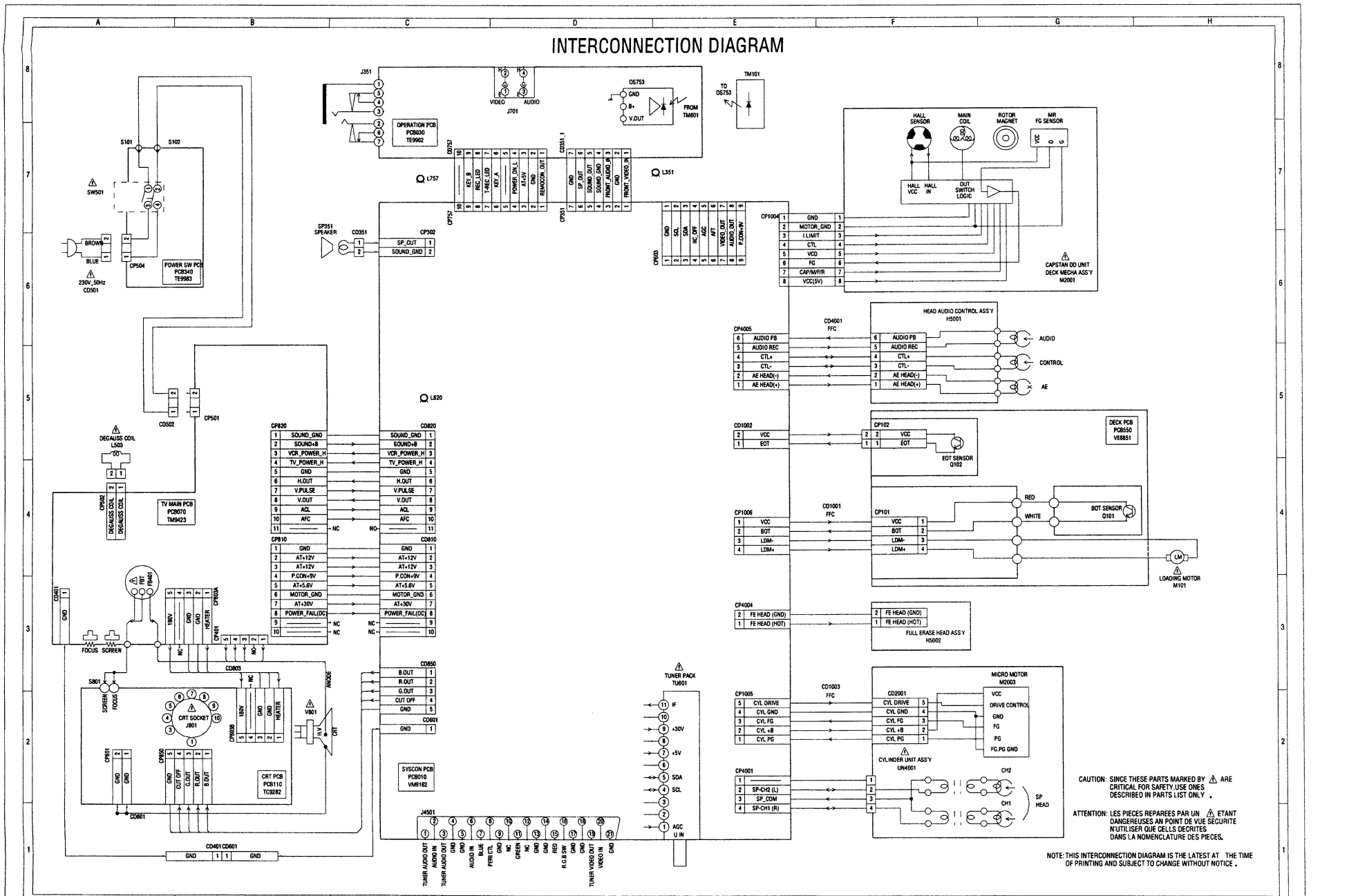
T'TEXT SCHEMATIC DIAGRAM



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

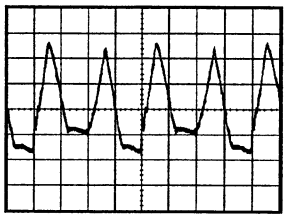
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

INTERCONNECTION DIAGRAM

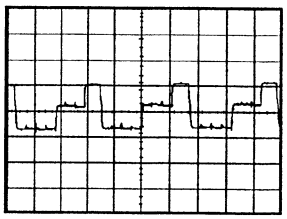

OPERATION PCB PCB030 TE9962
POWER SW PCB PCB340 TE9983
TV MAIN PCB PCB070 TM9423
CRT PCB PCB110 TC9282
SYSCON PCB PCB010 VM9162
DECK PCB PCB550 VE8851
CAPSTAN DD UNIT DECK MECHA ASS'Y M2001
HEAD AUDIO CONTROL ASS'Y H5001
FULL ERASE HEAD ASS'Y H5002
CYLINDER UNIT ASS'Y UN4001
MICRO MOTOR M2003
TUNER PACK TU601
LOADING MOTOR M101
CRT SOCKET J801
HALL SENSOR
MAIN COIL
ROTOR MAGNET
MR FG SENSOR
EOT SENSOR Q102
BOT SENSOR Q101
SP HEAD
AUDIO
CONTROL
AE
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY .
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

WAVEFORMS

TV POWER

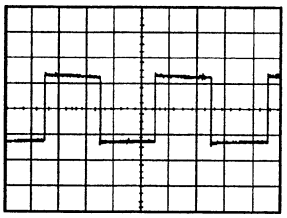


① 20.0V 5ms/div



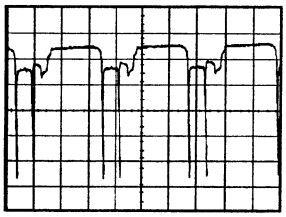
⑥ 50.0V 20μs/div

Y/C/AUDIO/HEAD AMP

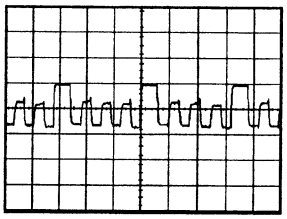


⑪ POWER ON
50.0V 10ms/div

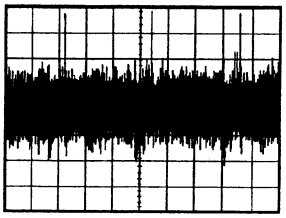
DEFLECTION



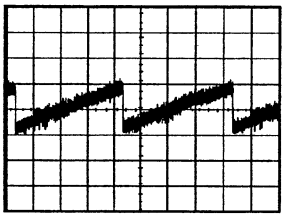
② 200mV 20μs/div



⑦ 50.0V 20μs/div

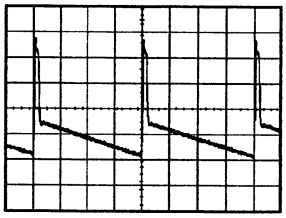


⑫ PB
10mV 20us/div

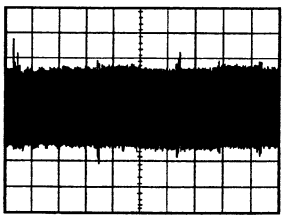


③ 50mV 5ms/div

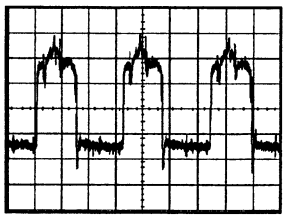
DEFLECTION



⑧ 1.0V 5ms/div

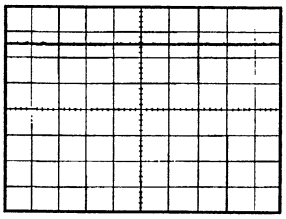


⑬ POWER ON
200mV 5us/div

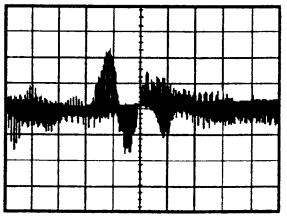


④ 20mV 20μs/div

TV POWER

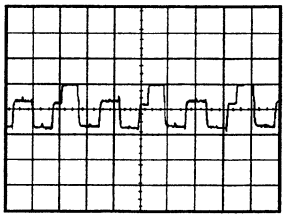


⑨ 20.0V 20μs/div

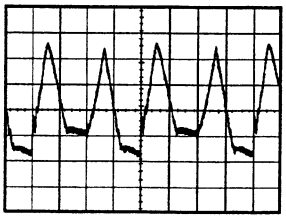


⑭ POWER ON
200mV 50ns/div

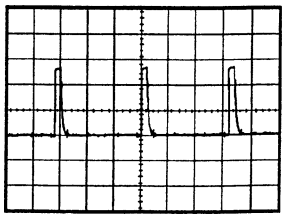
CRT



⑤ 50.0V 20μs/div



⑩ 20.0V 5ms/div

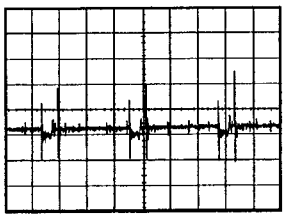


⑮ POWER ON
2.0V 20μs/div

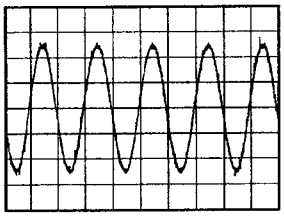
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

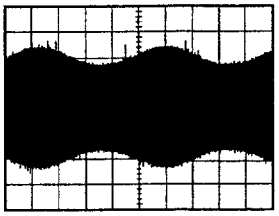
MICON



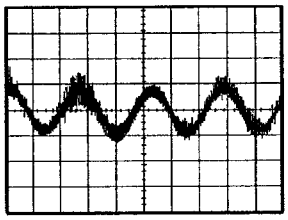
⑯ POWER ON
200mV 20μs/div



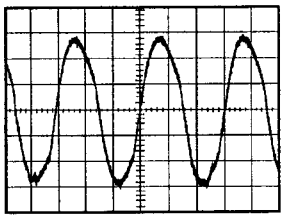
㉑ POWER ON
500mV 50ns/div



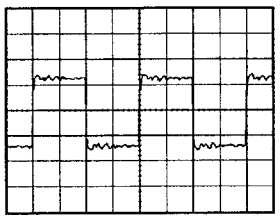
㉖ PB
500mV 100ms/div



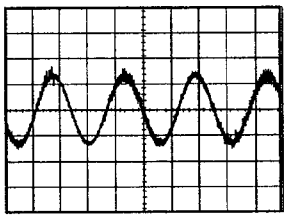
⑰ POWER ON
200mV 1ms/div



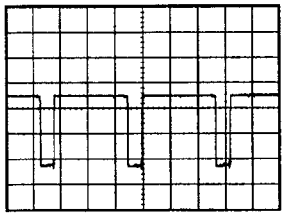
㉒ POWER ON
200mV 10us/div



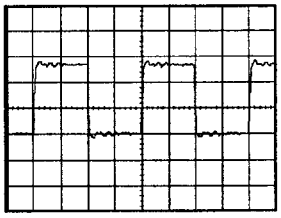
㉗ PB
2.0V 200ns/div



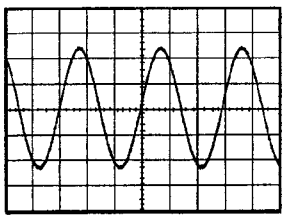
⑱ PB
500mV 1ms/div



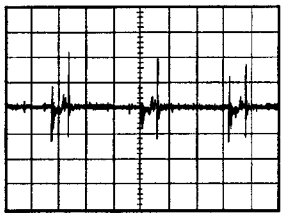
㉓ PB
2.0V 20us/div



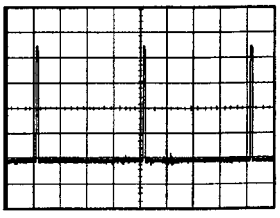
㉘ PB
2.0V 200ns/div



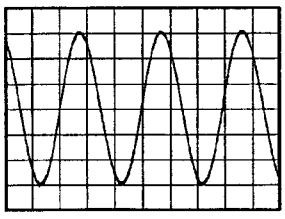
⑲ REC
10.0V 5us/div



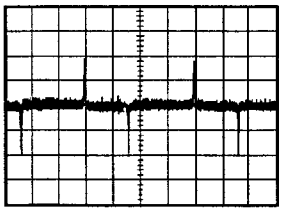
㉔ PB
200mV 20μs/div



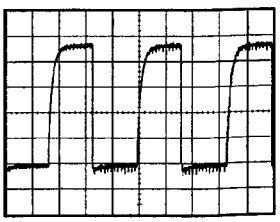
㉙ PB
1.0V 10ms/div



⑳ REC
10.0V 5us/div



㉕ PB
500mV 10ms/div

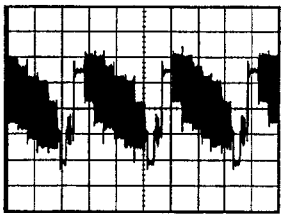


㉚ PB
1.0V 500μs/div

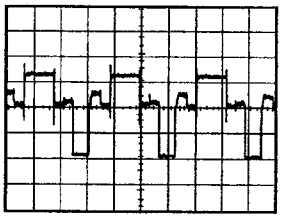
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

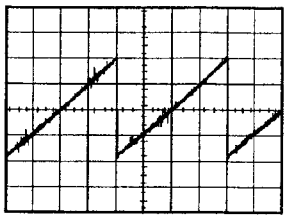
21PIN



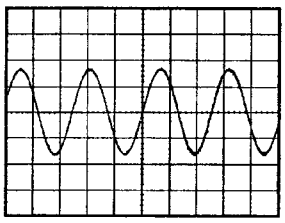
㉛ POWER ON
500mV 20us/div



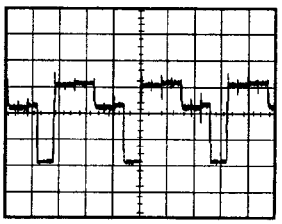
㉟ POWER ON
1.0V 20us/div



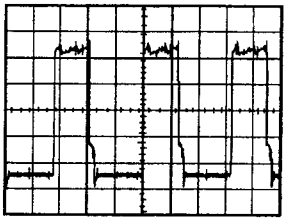
㊳ POWER ON
200mV 5ms/div



㉜ POWER ON
500mV 1ms/div

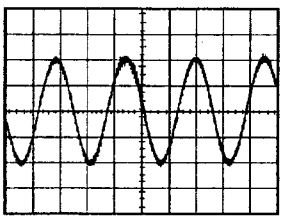


㊱ POWER ON
1.0V 20us/div

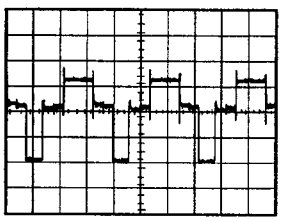


㊴ POWER ON
200mV 20us/div

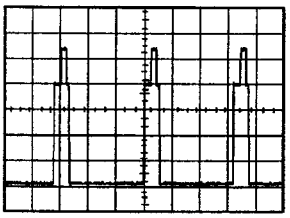
CHROMA/IF



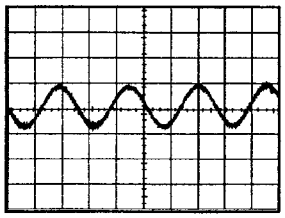
㉝ POWER ON
200mV 1ms/div



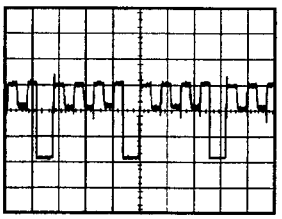
㊱ POWER ON
1.0V 20us/div



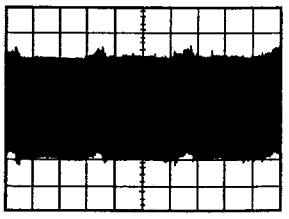
㊵ POWER ON
1.0V 20us/div



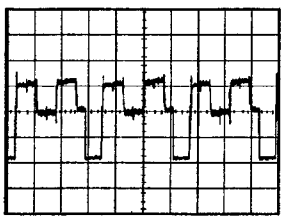
㉞ POWER ON
200mV 1ms/div



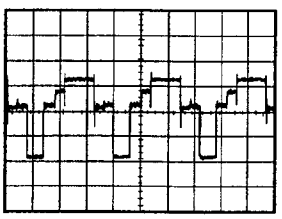
㊲ POWER ON
1.0V 20us/div



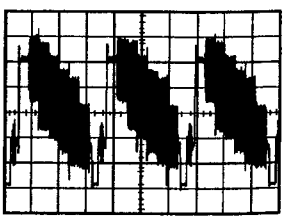
㊶ POWER ON
100mV 20us/div



㉟ POWER ON
1.0V 20μs/div



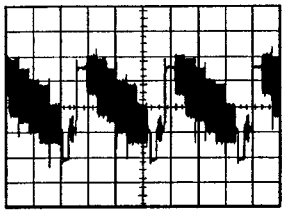
㊲ POWER ON
1.0V 20us/div



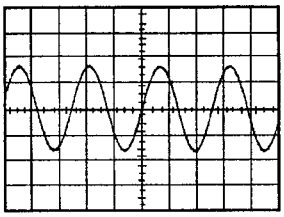
㊷ POWER ON
200mV 20us/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

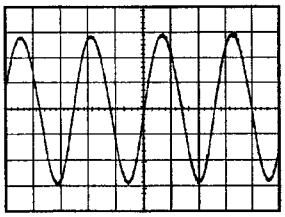


(44) POWER ON
500mV 20us/div



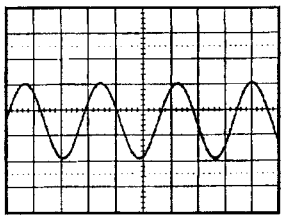
(45) POWER ON
500mV 1ms/div

SOUND AMP



(46) POWER ON
500mV 1ms/div

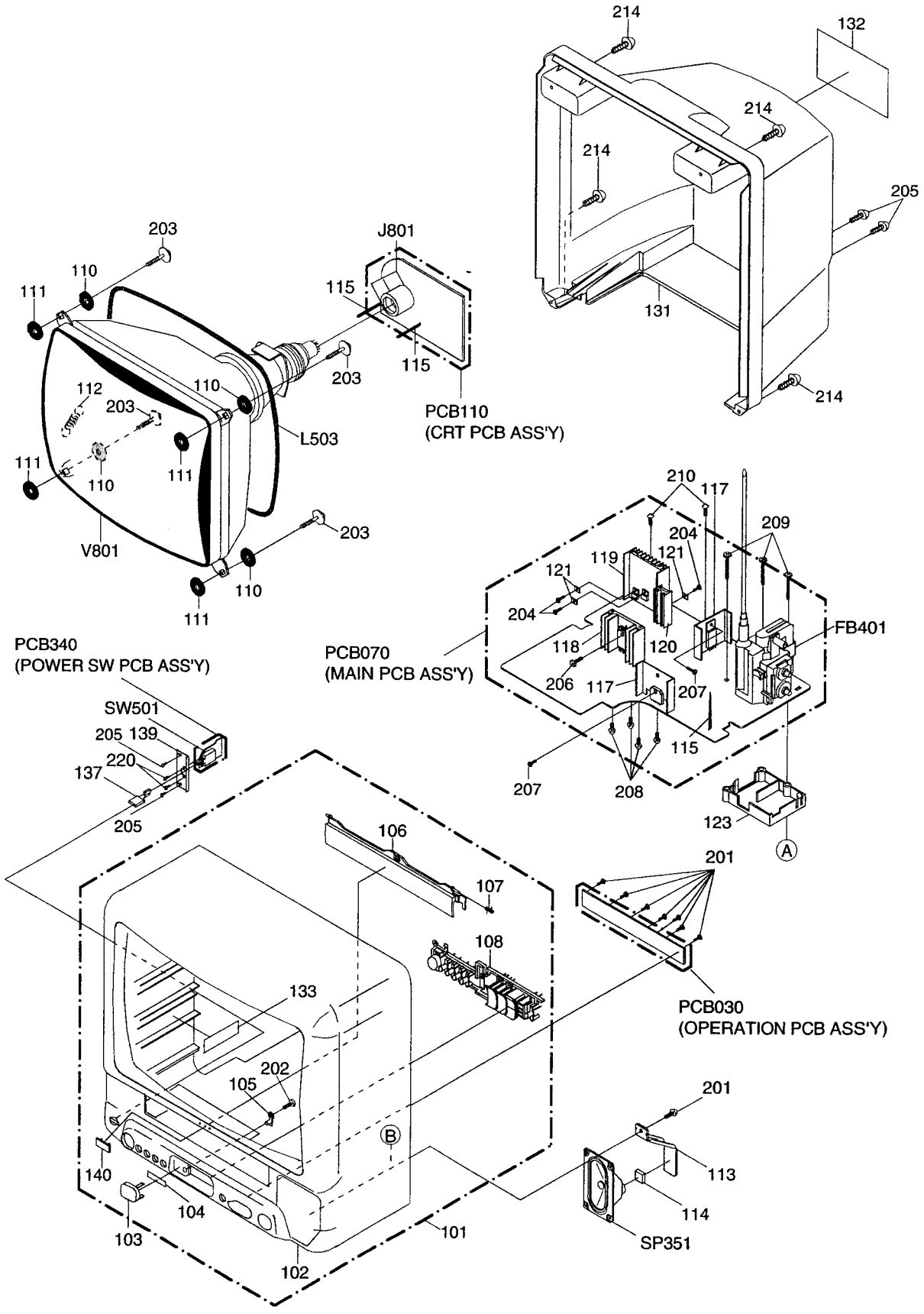
T' TEXT



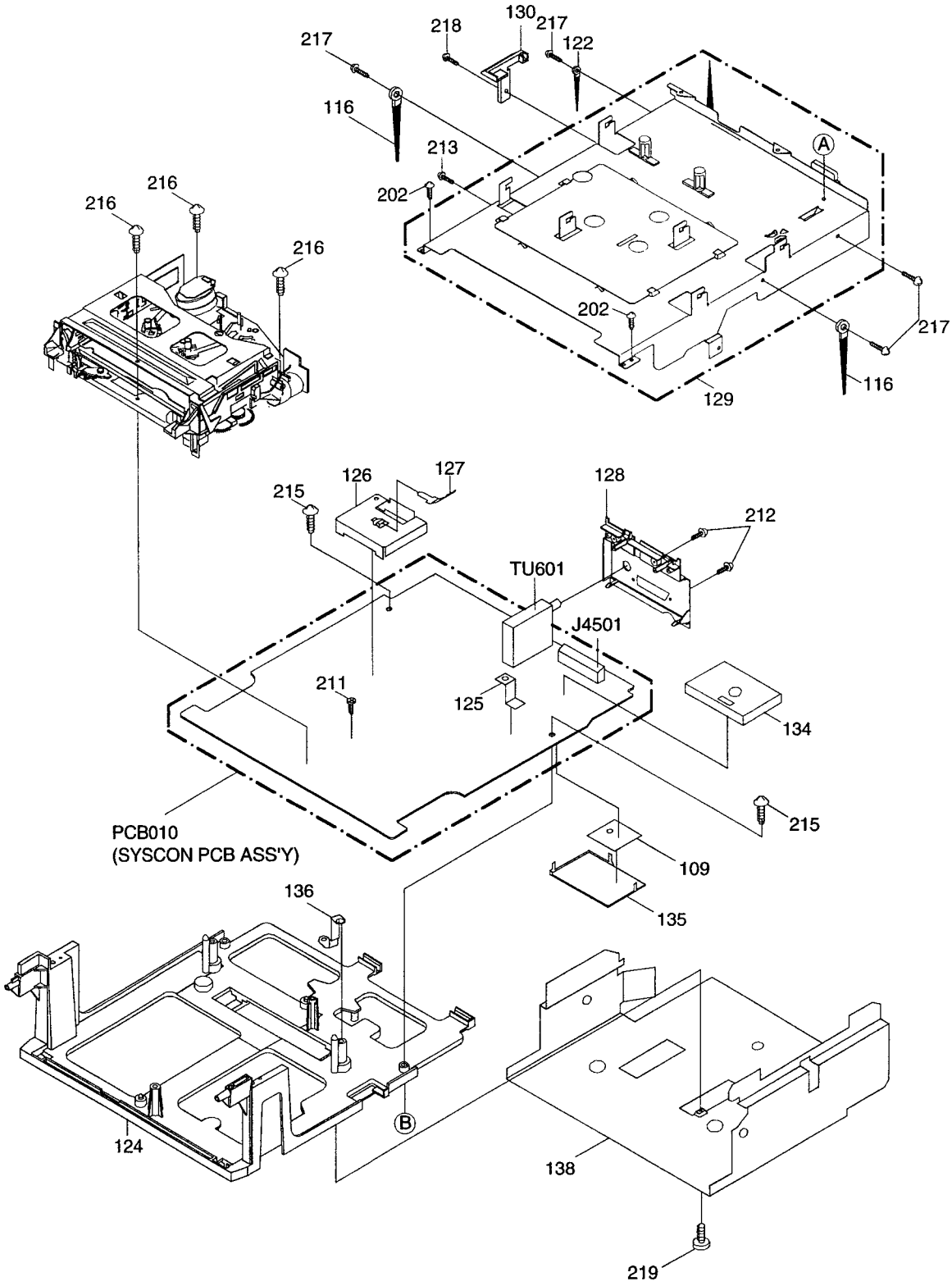
(47) POWER ON
0.5V 20ns/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

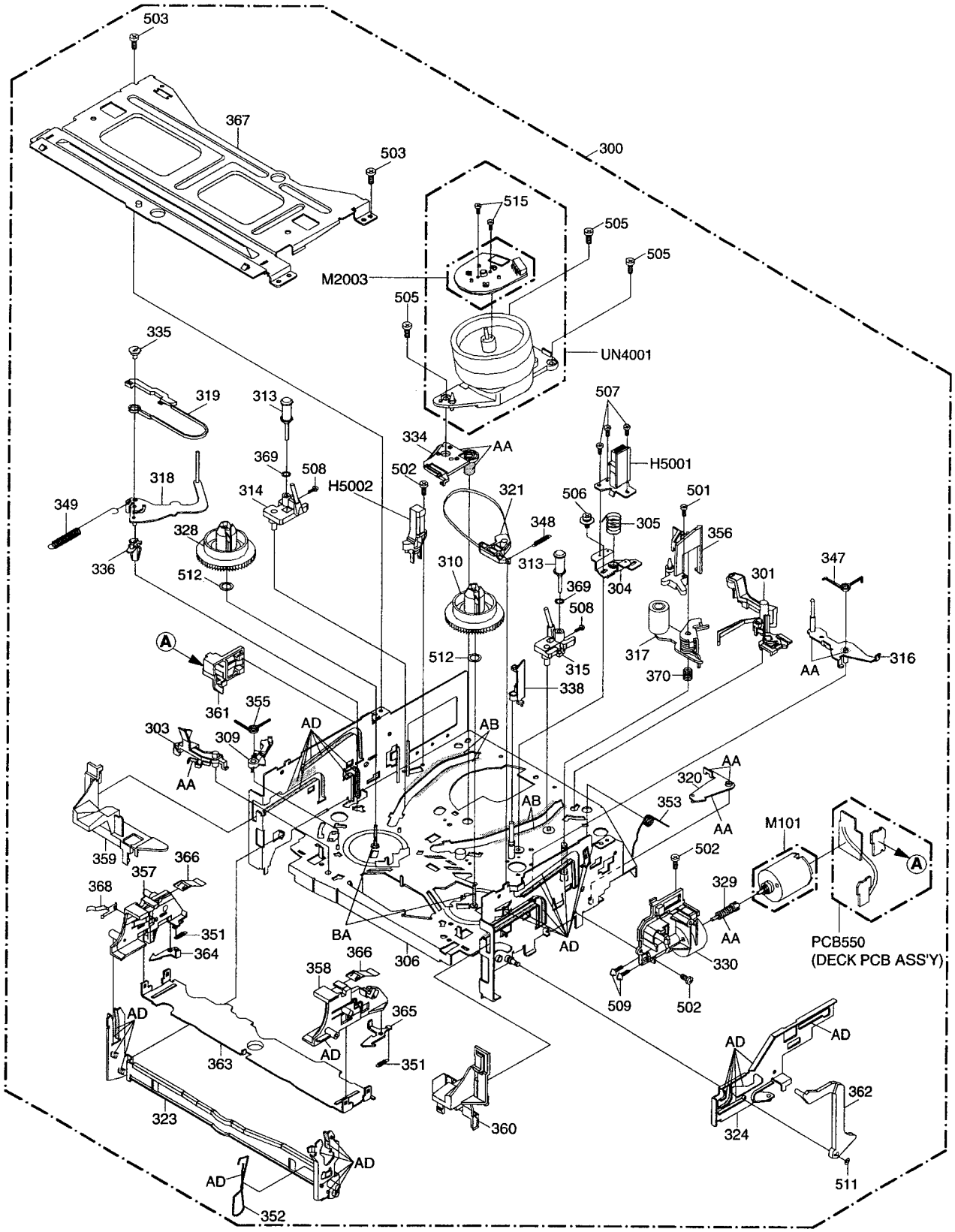
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW



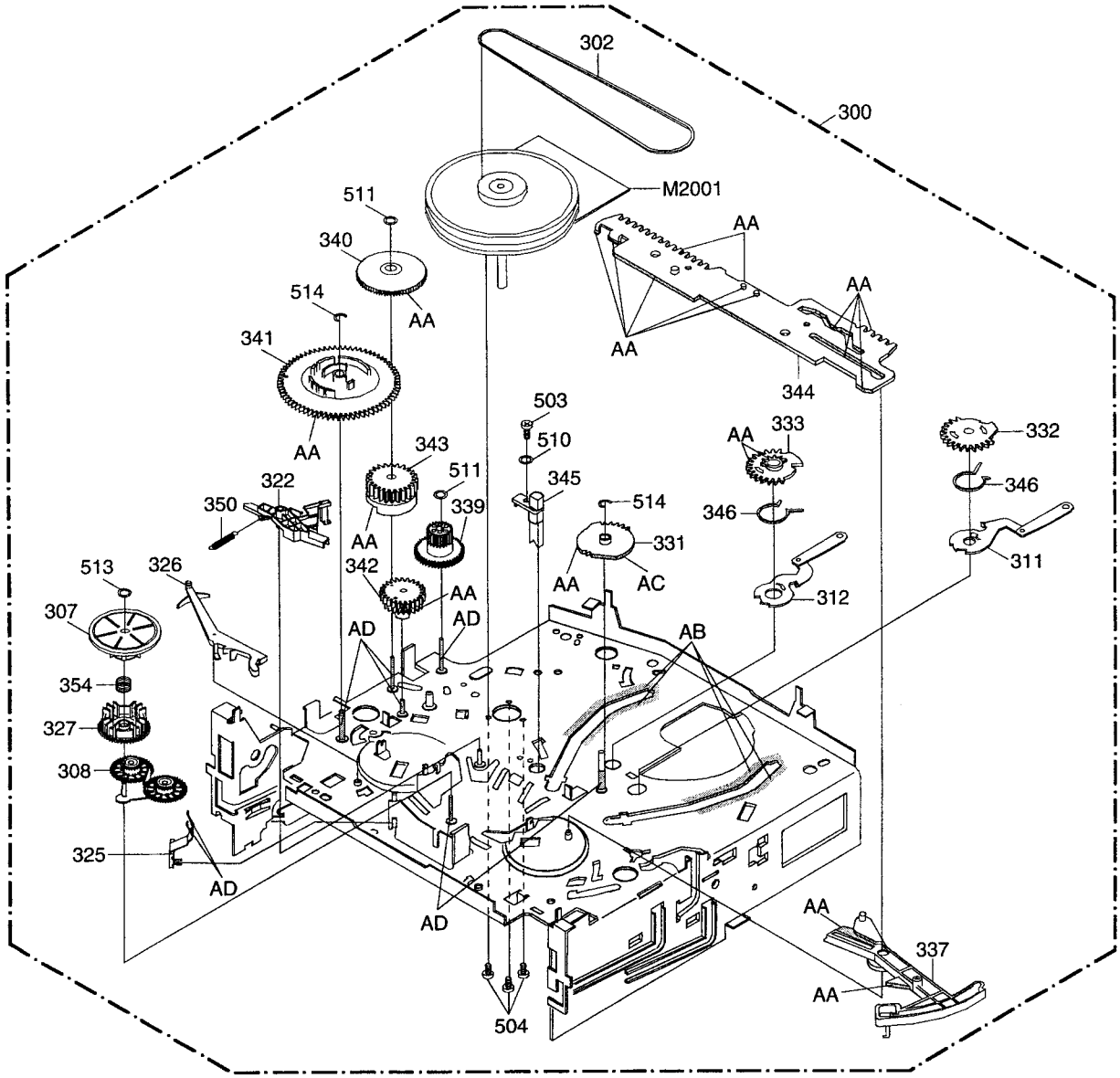
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-488M	AB
	FL-721	AC
	MG-33	AD
OIL	FL OIL No. 6115	BA

NOTE: Applying positions AA, AB, AC, AD and BA for the grease or oil are displayed for this section. Check if the correct grease or oil is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-488M	AB
	FL-721	AC
	MG-33	AD
OIL	FL OIL No. 6115	BA

NOTE: Applying positions AA, AB, AC, AD and BA for the grease or oil are displayed for this section. Check if the correct grease or oil is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
101	A54507M720	CABINET,FRONT ASS'Y		
102	701WPJA621	CABINET,FRONT		
103	711WPDA222	PLATE,FRONT		
104	7230006762	SHEET,LED		
105	713WPA0079	GUIDE,REMOCON		
106	712WPJA455	FLAP		
107	743WKA0032	SPRING,FLAP		
108	735WPDA250	BUTTON,FRAME		
109	755WNA0010	SHEET,PVC		
110	800WR00022	SHEET,CRT SUPPORT(A)		
111	800WR00064	SHEET,CRT SUPPORT(D)		
112	741WUA0013	SPRING,EARTH		
113	753WSA0122	PLATE,SPEAKER		
114	800WFAA003	CUSHION		10x15xT4
115	----	COATING CLIP		
116	899EFB0692	COATING CLIP EFB0692		
117	----	HEAT SINK		
118	----	HEAT SINK		
119	----	HEAT SINK		
120	----	HEAT SINK		
121	----	METAL SPACER		
122	8995034000	CORD CLIP UL CO.		
123	761WPA0150	HOLDER,FBT		
124	761WPA0164	HOLDER,DECK		
125	753WSA0118	PLATE,EARTH-SYSCON		
126	752WSA0144	SHIELD,CASE HEAD AMP		
127	753WUA0051	SPRING,EARTH HEAD AMP		
128	771WPA0232	PLATE,JACK		
129	752WSA0170	PLATE,DECK SHIELD ASS'Y		
130	761WPAA018	HOLDER,M/PCB		
131	702UPA0139	CABINET,BACK		
132	722202A333	SHEET,RATING		
133	7220001017	SHEET,PTB		
134	752WSA0148	SHEILD,CASE		
135	752WSA0149	SHIELD,COVER		
136	753WSA0120	PLATE,BOTTOM-EARTH		
137	735WPDA248	BUTTON,POWER		
138	752WSA0147	PLATE,SHIELD BOTTOM		
139	752WSA0157	PLATE,POWER SW		
140	7232020559	BADGE,BRAND		
201	8110630A04	SCREW,TAP TITE(P)	BRAZIER	3x10
202	8110630804	SCREW,TAP TITE(P)	BRAZIER	3x8
203	8121J50B54	SCREW,TAPPING(B0)	GW20	5x28
204	810A130A04	SCREW/WASHER(A)		M3x10
205	8110630A24	SCREW,TAP TITE(P)	BRAZIER	3x12
206	810B130A04	SCREW/WASHER(B)		M3x10
207	810B130804	SCREW/WASHER(B)		M3x8
208	8109630802	SCREW,TAP TITE(B)	BRAZIER	3x8
209	810A130B04	SCREW/WASHER(A)		M3x20
210	810A130604	SCREW/WASHER(A)		M3x6
211	8110330804	SCREW,TAP TITE(P)	FLAT	3x8
212	8110230A02	SCREW,TAP TITE(P)	BIND	3x10
213	8107226604	SCREW,TAP TITE(S)	BIND	2.6x6
214	8117540A64	SCREW,TAPPING(B0)	TRUSS	4x16
215	8117540B04	SCREW,TAPPING(B0)	TRUSS	4x20
216	8117140A24	SCREW,TAPPING(B0)	PAN	4x12
217	8107630604	SCREW,TAP TITE(S)	BRAZIER	3x6
218	8107230804	SCREW,TAP TITE(S)	BIND	3x8
219	8110630604	SCREW,TAP TITE(P)	BRAZIER	3x6
220	810A130504	SCREW/WASHER(A)		M3x5
---	JB5X0300	POLYBAG		
---	J5450701	INSTRUCTION BOOK		
---	J5450707	QUICK SET-UP SHEET		
---	J3A20702	GUARANTEE CARD		
---	791MHA0002	LAMIFILM BAG		
---	792UHAA011	PACKAGE,TOP		
---	792UHAA012	PACKAGE,BOTTOM		
---	793UCDA390	GIFT BOX		

CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
300	A54507M420A	DECK ASS'Y	A54507M420A	501	8107126A04	SCREW,TAP TITE(S) PAN	2.6x10
				502	8107226804	SCREW,TAP TITE(S) BIND	2.6x8
301	85OA500022	AHC ASS'Y		503	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
302	85OP200290	BELT,CAPSTAN (S)		504	8109126604	SCREW,TAP TITE(B) PAN	2.6x6
303	85OP900689	LEVER,REC		505	810A126804	SCREW/WASHER(A)	M2.6x8
304	85OP500083	BASE,AC HEAD		506	810B126404	SCREW/WASHER(B)	M2.6x4
305	85OP800324	SPRING,AC HEAD		507	8102120604	SCREW,PAN	M2x6
306	85OA000305	MAIN CHASSIS ASS'Y (S)		508	8102120304	SCREW,PAN	M2x3
307	85OA200077	CLUTCH ASS'Y (S)		509	8102130304	SCREW,PAN	M3.0x3.0
308	85OA200080	ARM,IDLER ASS'Y (S)					
309	85OP600556	ARM,SS BRAKE (S)		510	82A2675051	WASHER	2.6x7.5xT0.5
				511	82P266005N	POLYSLIDER WASHER(CUT)	2.6x6.0xT0.5
310	85OP200292	REEL,T (S)		512	82Q2647C5N	POLYSLIDER WASHER	2.6x4.7xT0.25
311	85OA300061	LOADING ARM S ASS'Y		513	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
312	85OA300062	LOADING ARM T ASS'Y		514	83ETW30000	E-RING	3.0
313	85OA400182	GUIDE ROLLER ASS'Y		515	810A123504	SEMS A	M2.3x5.0
314	85OA400188	BASE,INCL S ASS'Y					
315	85OA400196	BASE,INCL T(S) ASS'Y		CP101	069R740018	CONNECTOR PCB SIDE	52044-0445
316	85OA400199	P5-3 ARM ASS'Y(S)		CP102	0694220139	CONNECTOR PCB SIDE	173979-2
317	85OA400174	PINCH ROLLER BLOCK		H5001	1523D91034	HEAD (AUDIO CONTROL)	HVMXA1072A
318	85OA400175	TENSION ARM ASS'Y		H5002	1543D02013	HEAD (FULL ERASE)	HVFHP0032A
319	85OA400184	TENSION BAND ASS'Y (S)		⚠ M101	85OA600190	LOADING MOTOR ASS'Y	
				⚠ M2001	1594J98007	CAPSTAN DD UNIT	EP15BB
320	85OA400178	PINCH ROLLER LEVER ASS'Y		M2003	1589V11007	MICRO MOTOR	EP14BD
321	85OA600188	BRAKE T ASS'Y (S)		PCB550	A4C701B550	DECK PCB ASS'Y	VE8851
322	85OA600191	CAP BRAKE ASS'Y(S)		Q101	0000700320	TRANSISTOR,PHOTO	RPT-38PB113
323	85OA900213	LINK ASS'Y		Q102	0000700320	TRANSISTOR,PHOTO	RPT-38PB113
324	85OA900216	LINK LEVER ASS'Y		⚠ UN4001	A54702A500	CYLINDER UNIT ASS'Y	A54702A500
325	85OP200284	LEVER,CLUTCH (S)					
326	85OP200285	ACTUATOR,CLUTCH					
327	85OP200286	GEAR,COUPLING					
328	85OP200291	REEL,S (S)					
329	85OP600541	WORM					
330	85OP600542	BRACKET,MOTOR					
331	85OP300178	GEAR,MAIN LOADING					
332	85OP300179	GEAR,LOADING S					
333	85OP300180	GEAR,LOADING T					
334	85OP300186	HOLDER,LOADING GEAR					
335	85OP400472	ADJUST,TENSION					
336	85OP400492	HOLDER,TENSION					
337	85OP400490	LEVER,TENSION					
338	85OP400475	COVER,P4					
339	85OP600543	GEAR,JOINT					
340	85OP600544	GEAR,MIDDLE					
341	85OP600554	CAM,MAIN (S)					
342	85OP600546	CAM,P5					
343	85OP600547	CAM,PINCH ROLLER					
344	85OP600561	ROD,MAIN(S)					
345	85OP700035	REFLECTOR,LED					
346	85OP800318	SPRING,LOADING GEAR					
347	85OP800334	SPRING,P5 (S)					
348	85OP800335	SPRING,BRAKE T (S)					
349	85OP800322	SPRING,TENSION					
350	85OP800336	SPRING,CAP BRAKE (S)					
351	85OP800325	SPRING,LOCKER					
352	85OP800326	SPRING,LINK					
353	85OP800328	SPRING,DAMPER					
354	85OP800330	SPRING,RING					
355	85OP800337	SPRING,SS BRAKE (S)					
356	85OP900680	OPENER,CASS					
357	85OP900683	CASS SIDE L					
358	85OP900684	CASS SIDE R					
359	85OP900702	TAPE GUIDE L(P,R)					
360	85OP900686	TAPE GUIDE R					
361	85OP900687	COVER,SENSOR L					
362	85OP900688	LEVER,FLAP					
363	85OP900690	CASS HOLDER					
364	85OP900691	LOCKER,L					
365	85OP900692	LOCKER,R					
366	85OP900694	SPRING,PACK					
367	85OP900695	BRACKET,TOP					
368	85OP900696	SPRING,CASS EARTH					
369	85OP400485	O-RING					
370	85OP800341	SPRING,P/R ARM					

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
		RESISTORS		
⚠ R447	R65582680J	R, FUSE	68 OHM 1/2W	
⚠ R449	R5X2CE103J	R, CEMENT	10K OHM 7W	or
	R5Y2CE103J	R, CEMENT	10K OHM 7W	
⚠ R450	R655813R3J	R, FUSE	3.3 OHM 1W	or
	R635813R3J	R, FUSE	3.3 OHM 1W	or
	R615813R3J	R, FUSE	3.3 OHM 1W	
R452	R65581R68J	R, FUSE	0.68 OHM 1W	
⚠ R501	R5X2CE2R2J	R, CEMENT	2.2 OHM 7W	or
	R5Y2CE2R2J	R, CEMENT	2.2 OHM 7W	
⚠ R505	R3X28B683J	R, METAL	68K OHM 3W	
⚠ R510	R3X28B1R2J	R, METAL	1.2 OHM 3W	
⚠ R512	R3X181273J	R, METAL OXIDE	27K OHM 1W	
⚠ R517	R3X18A2R7J	R, METAL OXIDE	2.7 OHM 2W	
⚠ R526	R6558A3R9J	R, FUSE	3.9 OHM 2W	
R538	R011K2155J	RC	1.5M OHM 1/2W	
⚠ R542	R32181R39J	R, METAL OXIDE	0.39 OHM 1W	
⚠ R543	R635U2681J	R, FUSE	680 OHM 1/2W	
R676	R001T6152J	RC	1.5K OHM 1/6W	
⚠ R802	R3X18A123J	R, METAL OXIDE	12K OHM 2W	or
	R3U18A123J	R, METAL OXIDE	12K OHM 2W	
⚠ R805	R3X18A123J	R, METAL OXIDE	12K OHM 2W	or
	R3U18A123J	R, METAL OXIDE	12K OHM 2W	
⚠ R810	R3X18A123J	R, METAL OXIDE	12K OHM 2W	or
	R3U18A123J	R, METAL OXIDE	12K OHM 2W	
⚠ R1005	R615J12R7J	R, FUSE	2.7 OHM 1W	
R4073	R001T6225J	RC	2.2M OHM 1/6W	
R4074	R001T6105J	RC	1M OHM 1/6W	
		CAPACITORS		
⚠ C407	E02L03222M	CE	2200 UF 25V	
⚠ C421	E53Z04102M	CE	1000 UF 35V VZ	
C423	P411F3474J	CMPP	0.47 UF 250V	
⚠ C424	P414F9392H	CMPP	0.0039UF 1.6KV	
⚠ C425	C01BBP7U2K	CC	680 PF 2KV BP	
⚠ C431	E02LTD100M	CE	10 UF 250V YK	
C434	P3N1F2223J	CPP	0.022 UF 200V	
⚠ C502	C13HB07H3K	CC	0.0022UF 2KV B	
⚠ C503	C13HB07H3K	CC	0.0022UF 2KV B	
⚠ C505	P2122B224M	CMP	0.22 UF 250V	
⚠ C506	P2122B104M	CMP	0.1 UF 250V	
⚠ C507	E52C0H101M	CE	100 UF 400V	
⚠ C508	CB3930M13M	CC	0.001 UF 250V	
⚠ C510	E5EZT4101M	CE	100 UF 35V VZ	
⚠ C511	E5EZT2471M	CE	470 UF 16V VZ	
C513	E02LT5220M	CE	22 UF 50V	
C514	C01BBP7K3K	CC	0.0027UF 2KV BP	
C517	C01BBP7G3K	CC	0.0018UF 2KV BP	
⚠ C521	E53VFB221M	CE	220 UF 160V	
⚠ C523	E5EZT4471M	CE	470 UF 35V YK	
⚠ C524	E5EZT3102M	CE	1000 UF 25V MHE	
⚠ C526	E5EZT1471M	CE	470 UF 10V VZ	
C527	C01BBP7K3K	CC	0.0027UF 2KV BP	
⚠ C529	CB3930MH3M	CC	0.0022UF 250V	
⚠ C530	CB3930M13M	CC	0.001 UF 250V	
⚠ C531	E5EZT2102M	CE	1000 UF 16V YK	
⚠ C532	E5EZT2471M	CE	470 UF 16V VZ	
⚠ C537	E02LT5R47M	CE	0.047 UF 50V YK	
⚠ C540	E5EZTB100M	CE	10 UF 100V	
⚠ C541	E5EZTB100M	CE	10 UF 100V	
C560	C01BBP7H3K	CC	0.0022UF 2KV BP	
C676	CHG0B04H2K	CC	220 PF 50V B	
C681	C0JTCH4G2J	CC	180 PF 50V CH	
C682	CS0SB0414K	CC	0.01 UF 50V B	
C686	CHG0B04E2K	CC	150 PF 50V B	
C801	C01BBP7H3K	CC	0.0022UF 2KV BP	
C819	C01BBP7H3K	CC	0.0022UF 2KV BP	
C1003	E51XWP104Z	CE	0.1 F 5.5V	
		DIODES		
D401	D28T11E1N1	DIODE, SILICON	11E1N-TA1B2	
⚠ D411	D28T10ELS6	DIODE, RECTIFIER	10ELS6TA1B2	
⚠ D413	D28T10ELS6	DIODE, RECTIFIER	10ELS6TA1B2	
⚠ D501	D2BTRM11C0	DIODE, RECTIFIER	RM11C	
⚠ D502	D2BTRM11C0	DIODE, RECTIFIER	RM11C	
⚠ D503	D2BTRM11C0	DIODE, RECTIFIER	RM11C	
⚠ D504	D2BTRM11C0	DIODE, RECTIFIER	RM11C	
⚠ D505	D28T21DQN9	DIODE, SCHOTTKY	21DQ09N-TA2B1	
D506	D28T10ELS6	DIODE, RECTIFIER	10ELS6TA1B2	
D507	D2BTRU2YX0	DIODE, SILICON	RU2YX-V1	

REF. NO.	PART NO.	DESCRIPTION		
		DIODES		
⚠ D508	D28T21DQN9	DIODE, SCHOTTKY	21DQ09N-TA2B1	
⚠ D509	D28T21DQN9	DIODE, SCHOTTKY	21DQ09N-TA2B1	
⚠ D510	D2BTRU2AM0	DIODE, SILICON	RU2AM V1	
⚠ D511	D28TELS2N2	DIODE, RECTIFER	10ELS2N-TA1B2	
⚠ D512	D28T21DQN9	DIODE, SCHOTTKY	21DQ09N-TA2B1	
⚠ D515	D97U03001B	DIODE, ZENER	MTZJ30B T-77	or
	D92T0300B2	DIODE, ZENER	RD30EB2 TA11R	
D516	D1VT001330	DIODE, SILICON	1SS133T-77	
D517	D1VT001330	DIODE, SILICON	1SS133T-77	
D518	D2BT0EG01Z	DIODE, SILICON	EG01Z-V0	
⚠ D519	D28T21DQN9	DIODE, SCHOTTKY	21DQ09N-TA2B1	
D521	D2BT0EG01Z	DIODE, SILICON	EG01Z-V0	
D523	D1VT001330	DIODE, SILICON	1SS133T-77	
D525	D2BT0EG01C	DIODE, RECTIFER	EG-01C	
D528	D97U05R61B	DIODE, ZENER	MTZJ5.6B T-77	
D529	D1VT001330	DIODE, SILICON	1SS133T-77	
D601	D1VT001330	DIODE, SILICON	1SS133T-77	
D602	D1VT001330	DIODE, SILICON	1SS133T-77	
D603	D1VT001330	DIODE, SILICON	1SS133T-77	
D604	D28T11ESN1	DIODE, SILICON	11ES1N-TA1B2	
D605	D97U05R61B	DIODE, ZENER	MTZJ5.6B T-77	
D791	002132Q040	LED	SLZ-936C-11-S-T1	
D793	002132Q040	LED	SLZ-936C-11-S-T1	
D794	002132Q040	LED	SLZ-936C-11-S-T1	
D852	D1VT001330	DIODE, SILICON	1SS133T-77	
D853	D53T002510	DIODE, VARIABLE CAPACITOR	SVC251SPA-AC	
D854	D97U06R81B	DIODE, ZENER	MTZJ6.8B T-77	
D855	D1VT001330	DIODE, SILICON	1SS133T-77	
D856	D1VT001330	DIODE, SILICON	1SS133T-77	
D857	D1VT001330	DIODE, SILICON	1SS133T-77	
D858	D1VT001330	DIODE, SILICON	1SS133T-77	
D859	D1VT001330	DIODE, SILICON	1SS133T-77	
D860	D1VT001330	DIODE, SILICON	1SS133T-77	
D861	D1VT001330	DIODE, SILICON	1SS133T-77	
D1001	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D1002	D1VT001330	DIODE, SILICON	1SS133T-77	
D1003	0010600060	LED	SID1050CM	
D1004	D2LXE65800	DIODE, SILICON	1N4005E-G23	
D1005	D92T1120B0	DIODE, ZENER	RD12FB-T7	
D1006	D23U1003A3	DIODE, SCHOTTKY	SB10-03A3	
D1008	D97U05R61B	DIODE, ZENER	MTZJ5.6B T-77	
D1010	D23U1003A3	DIODE, SCHOTTKY	SB10-03A3	
D1011	D1VT001330	DIODE, SILICON	1SS133T-77	
D1012	D1VT001330	DIODE, SILICON	1SS133T-77	
D1014	D1VT001330	DIODE, SILICON	1SS133T-77	
D1015	D1VT001330	DIODE, SILICON	1SS133T-77	
D4001	D97U06R81B	DIODE, ZENER	MTZJ6.8B T-77	
D4002	D97U06R81B	DIODE, ZENER	MTZJ6.8B T-77	
D4003	D1VTB721Q0	DIODE, SCHOTTKY	RB721QT-77	
D4202	D28T11ESN1	DIODE, SILICON	11ES1N-TA1B2	
D4501	D97U01301B	DIODE, ZENER	MTZJ13B T-77	
D4502	D97U01301B	DIODE, ZENER	MTZJ13B T-77	
D4503	D1VT001330	DIODE, SILICON	1SS133T-77	
D4505	D97U01201B	DIODE, ZENER	MTZJ12B T-77	
D4506	D97U01201B	DIODE, ZENER	MTZJ12B T-77	
D4507	D97U01201B	DIODE, ZENER	MTZJ12B T-77	
D4508	D97U01201B	DIODE, ZENER	MTZJ12B T-77	
D4510	D1VT001330	DIODE, SILICON	1SS133T-77	
D4511	D1VT001330	DIODE, SILICON	1SS133T-77	
		ICS		
⚠ IC351	I01DP75110	IC	AN7511	
⚠ IC401	I03SD78400	IC	LA7840	
⚠ IC501	I2BT067070	IC	STR-F6707	
⚠ IC502	I0Q0978050	IC	NJM7805FD	
⚠ IC503	I0GA909RD0	IC	PQ09RD08	
⚠ IC504	I0QK978120	IC	NJM7812FA	
⚠ IC506	000210001R	PHOTO COUPLER	ON3171R	
IC601	I03DE68120	IC	LA76812	
IC602	I0Q0978050	IC	NJM7805FD	
IC851	I5CD001950	IC	CF70195	
IC852	I5CD023060	IC	CF72306	
IC853	I55DC4053A	IC	TC74HC4053AP	
⚠ IC1001	I07SQ955AN	IC	BA6955AN	
IC1002	IE1J0S31AH	IC	RE5VS31A	
IC1003	I03FE772V0	IC	LC74772V	
IC1006	I54F50079A	IC	OEC0079A	
IC1099	A54507M015	IC	M24C08-BN6	

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
ICS				
IC4001	I04F38217F	IC	HA118217F	
TRANSISTORS				
Q352	TPYTC03001	COMPOUND TRANSISTOR	DTA124ESTP	
⚠ Q405	TC3T022710	TRANSISTOR, SILICON	2SC2271(D,E)-AE	
⚠ Q406	TDUQ025990	TRANSISTOR, SILICON	2SD2599	
⚠ Q501	TC3T029090	TRANSISTOR, SILICON	2SC2909(S,T)-AA	
⚠ Q502	TA3T1371A0	TRANSISTOR, SILICON	2SA1371(D,E)-AE	
⚠ Q503	TCWQ4160E0	TRANSISTOR, SILICON	2SC4160-OEC-YAC1	
⚠ Q504	TCST02001L	TRANSISTOR, SILICON	2SC2001(C)-T_L	
Q506	TNYTJ03001	COMPOUND TRANSISTOR	DTC114TSTP	
Q507	TCST009450	TRANSISTOR, SILICON	2SC945(C)-T(P,Q)	
Q513	TNYTB03001	COMPOUND TRANSISTOR	DTC114ESTP	
Q601	TC3T030000	TRANSISTOR, SILICON	2SC3000-AA	
Q607	TAST007330	TRANSISTOR, SILICON	2SA733(C)-T(P,Q)	
Q608	TAYT0933S0	TRANSISTOR, SILICON	2SA933STP(R,S)	or
	TA7T0933S0	TRANSISTOR, SILICON	2SA933STP(R,S)	
⚠ Q804	TC3F042170	TRANSISTOR, SILICON	2SC4217(D,E)-RAC	
⚠ Q805	TC3F042170	TRANSISTOR, SILICON	2SC4217(D,E)-RAC	
⚠ Q806	TC3F042170	TRANSISTOR, SILICON	2SC4217(D,E)-RAC	
Q851	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q852	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q853	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q855	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q862	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q863	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q1001	0002G00540	PHOTO COUPLER	GP1S566	
Q1002	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q1003	0002G00550	PHOTO COUPLER	GP1S94L	
Q1005	0002G00540	PHOTO COUPLER	GP1S566	
Q1006	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q1009	0002G00550	PHOTO COUPLER	GP1S94L	
Q1014	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q1015	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q1016	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q1019	TB3T008920	TRANSISTOR, SILICON	2SB892(S,T)-AE	
Q1020	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146	
Q1021	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q4001	TD3T007340	TRANSISTOR, SILICON	2SD734(E,F)-AA	
Q4002	TD3T007340	TRANSISTOR, SILICON	2SD734(E,F)-AA	
Q4003	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146	
Q4004	TCWT022740	TRANSISTOR, SILICON	2SC2274(E,F)-AA	
Q4005	TCWT022740	TRANSISTOR, SILICON	2SC2274(E,F)-AA	
Q4006	T6YJ1037K0	TRANSISTOR, SILICON	2SA1037AKT146(R,S)	
Q4007	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q4201	TNYTB05001	COMPOUND TRANSISTOR	DTC114EKT147	
Q4501	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q4502	T6YJ1037K0	TRANSISTOR, SILICON	2SA1037AKT146(R,S)	
Q4505	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q4507	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q4509	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q4510	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
Q4511	T8YJ2412K0	TRANSISTOR, SILICON	2SC2412KT146(R,S)	
COILS &TRANSFORMERS				
L351	02A6A8A0A1	CORE, FERRITE	HF57T18.5*10*10	
L401	021679472K	COIL	4.7 MH	
L403	021U6D680K	COIL	68 UH	
⚠ L501	029X000052	COIL, LINE FILTER	SS28V-08350	
⚠ L502	029X000065	COIL, LINE FILTER	SU16V-20030	
⚠ L503	028F140018	COIL, DEGAUSS	8F140018	
L601	02167D101K	COIL	100 UH	
L603	021LA6150K	COIL	15 UH	
L604	021LA6R33M	COIL	0.33 UH	
L605	02167D101K	COIL	100 UH	
L606	021LA62R2M	COIL	2.2 UH	
L607	02167D101K	COIL	100 UH	
L608	0336000428	COIL, VIDEO IFT	3600042	
L609	02167D101K	COIL	100 UH	
L611	021LA6150K	COIL	15 UH	
L757	02A6A8A0A1	CORE, FERRITE	HF57T18.5*10*10	
L801	02167D101K	COIL	100 UH	
L820	02A6A8A0A1	CORE, FERRITE	HF57T18.5*10*10	or
	02A6B9A970	CORE, FERRITE	HF70T29*7.5*19	
L851	021673100K	COIL	10 UH	
L852	021673100K	COIL	10 UH	
L853	021LA61R5K	COIL	1.5 UH	
L1001	021LA6330K	COIL	33 UH	
L4001	0326230038	COIL, TRAP	2623003	

REF. NO.	PART NO.	DESCRIPTION	
COILS &TRANSFORMERS			
L4002	02167D101K	COIL	100 UH
L4003	02167D101K	COIL	100 UH
L4004	02167D101K	COIL	100 UH
L4005	0316260088	COIL, BIAS OSC	1626008
L4006	02167D101K	COIL	100 UH
L4008	02167D101K	COIL	100 UH
L4009	02167D101K	COIL	100 UH
L4011	021LA6120K	COIL	12 UH
L4012	021LA6221K	COIL	220 UH
L4013	02167D101K	COIL	100 UH
L4015	02167D101K	COIL	100 UH
L4016	021LA6390K	COIL	39 UH
L4501	021673101K	COIL	100 UH
L4502	021673101K	COIL	100 UH
L4503	021LA6100K	COIL	10 UH
L4504	021LA6100K	COIL	10 UH
T401	03305Y002S	TRANS, HORIZONTAL DRIVE	305Y002
⚠ T501	048135040W	TRANSFORMER, SWITCHING	8135040W
JACKS			
⚠ J351	0602131012	JACK,RCA 3.5	HSJ2630-010070 or
	060G131014	RCA, JACK	HTJ-035-28A
J701	0602101020	JACK, RCA	JPJ3811-01-430
⚠ J801	066X120014	SOCKET, CRT	HPS3200-010501
J4501	063G100037	SOCKET, 21PIN	035_0_9985_05
SWITCHES			
⚠ SW501	0530205001	SWITCH, PLUS	SDDFC30200
SW751	0504201T31	SWITCH, TACT	SKHVBED010
SW791	0504201T31	SWITCH, TACT	SKHVBED010
SW792	0504201T31	SWITCH, TACT	SKHVBED010
SW793	0504201T31	SWITCH, TACT	SKHVBED010
SW794	0504201T31	SWITCH, TACT	SKHVBED010
SW795	0504201T31	SWITCH, TACT	SKHVBED010
SW796	0504201T31	SWITCH, TACT	SKHVBED010
SW797	0504201T31	SWITCH, TACT	SKHVBED010
SW798	0504201T31	SWITCH, TACT	SKHVBED010
SW799	0504201T31	SWITCH, TACT	SKHVBED010
SW1001	0508221001	SWITCH (LEAF)	SPVF130100
VARIABLE RESISTOR			
VR502	V1263L2BTC	VOLUME, SEMI FIXED	RH063MCN2R
P.C.BOARD ASSEMBLIES			
PCB010	A54507M01A	PCB ASS'Y	VM9162A
PCB030	A54507M03A	PCB ASS'Y	TE9962A
PCB070	A54507M07A	PCB ASS'Y	TM9423A
PCB110	A54517M11A	PCB ASS'Y	TC9282A
PCB340	A54507M34A	PCB ASS'Y	TE9983A
PCB550	A4C701B550	SEE CHASSIS REPLACEMENT PARTS LIST	
MISCELLANEOUS			
B504	024AT03655	CORE, BEADS	BL01RN1-A63T6
B505	024A8407C2	CORE, BEADS	BL02RN2-R62
B701	024AT03655	CORE, BEADS	BL01RN1-A63T6
B702	024A8407C2	CORE, BEADS	BL02RN2-R62
B851	024DT03581	CORE, BEADS	LFP3A-M3R2TA
B1001	024AC3601C	CORE, BEADS	BLM21A601SPT
B4501	024AC3601C	CORE, BEADS	BLM21A601SPT
B4502	024AC3601C	CORE, BEADS	BLM21A601SPT
BT001	1412004008	BATTERY, MANGAN	R03(AB)E_20_T
BT002	1412004008	BATTERY, MANGAN	R03(AB)E_20_T
CD351	06CH27080A	CORD, CONNECTOR	CH27080A
CD351	06CH12418A	CORD, CONNECTOR	CH12418A
CD401	068101410A	CORD, CONNECTOR	8101410A
⚠ CD501	1206655820	CORD, AC	1206655820
CD502	06CPU2012A	CORD, CONNECTOR	CPU2012A
CD601	068101411A	CORD, CONNECTOR	8101411A
CD757	06CH2A014A	CORD, CONNECTOR	CH2A014A
CD801	127C140016	BRAIDED WIRE	TD-B0005
CD803	122E053002	CORD, JUMPER	2E053002
CD810	06CH2A014A	CORD, CONNECTOR	CH2A014A
CD820	06CH2B025A	CORD, CONNECTOR	CH2B025A
CD850	06CH25080A	CORD, CONNECTOR	CH25080A
CF601	1022T38R9A	FILTER, SAW	SAF38.9MAZ220Z
CF602	1012T04001	FILTER, CERAMIC TRAP	MKT40.4MA110P-TF
CP302	069X120249	CONNECTOR PCB SIDE	B2B-EH-A
CP351	069E270129	CONNECTOR PCB SIDE	8283_0712_00_000
⚠ CP401	069W450039	CONNECTOR PCB SIDE	TV-50P-05-V2
CP501	0697320039	CORD, UX CONNECTOR	THL-P03P-B1
CP502	069W420029	CONNECTOR PCB SIDE	TV-50P-02-A1
CP504	0697320039	CORD, UX CONNECTOR	THL-P03P-B1

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		MISCELLANEOUS	
	CP603	069E290129	CONNECTOR PCB SIDE 8283_0912_00_000
	CP757	069E2A0129	CONNECTOR PCB SIDE 8283_1012_00_000
	CP801	069W320018	CONNECTOR PCB SIDE TS-80P-02-V1
	CP810	069E2A0129	CONNECTOR PCB SIDE 8283_1012_00_000
	CP820	069E2B0129	CONNECTOR PCB SIDE 8283_1112_00_000
	CP850	069E250129	CONNECTOR PCB SIDE 8283_0512_00_000
	CD1001	122L040904	CORD, JUMPER 2L040904
	CD1002	06CH22075A	CORD, CONNECTOR CH22075A
	CD1003	122F051702	CORD, JUMPER 2F051702
	CD4001	122L061501	CORD, JUMPER 2L061501
	CP1004	0697280590	CONNECTOR PCB SIDE TMC-J08P-B1
	CP1005	069R750028	CONNECTOR PCB SIDE 52045-0545
	CP1006	069R740028	CONNECTOR PCB SIDE 52045-0445
	CP4001	0697240600	CONNECTOR PCB SIDE TOC-C04X-B1
	CP4004	0697120320	CONNECTOR PCB SIDE TMC-T02X-E1
	CP4005	069R760028	CONNECTOR PCB SIDE 52045-0645
	CP803A	067R105019	WIRE HOLDER 51052-0500
	CP803B	067R105019	WIRE HOLDER 51052-0500
	CUS011	800WF00004	CUSHION-A
	CUS012	800WF00019	CUSHION-C
⚠	F501	0808T04002	FUSE 218004
⚠	F502	0808T1R602	FUSE 21801.6
⚠	FB401	043214029F	TRANSFORMER, FLYBACK 3214029F
	FH501	06710T0006	HOLDER, FUSE EYF-52BC
	FH502	06710T0006	HOLDER, FUSE EYF-52BC
	FH503	06710T0006	HOLDER, FUSE EYF-52BC
	FH504	06710T0006	HOLDER, FUSE EYF-52BC
⚠	ICP502	083PC04002	MICRO FUSE 251004
⚠	ICP503	083PC05002	MICRO FUSE 251005
⚠	ICP504	083PC05002	MICRO FUSE 251005
⚠	ICP505	083PC02002	MICRO FUSE 251002
	OS753	077Q000017	REMOTE RECEIVER PIC-28143TH5
⚠	RY501	0560Q10114	RELAY SDT-SS-109DM
	SP351	070C533008	SPEAKER 810-47-171
⚠	TH501	D8R0F140M0	DEGAUSS ELEMENT PTH451C262BF140M
	TM101	07660CH140	TRANSMITTER SBJU00025A
⚠	TU601	0145511021	TUNER, VHF-UHF TUWOF4EG-771F2
⚠	V801	098P140496	CRT W/DY A34AGT13x07
	X601	100CT4R406	CRYSTAL HC-94/U 4.433619MHz
	X851	100CT01302	CRYSTAL HC-49/U-S 13875KHz
	X1001	100CT01002	CRYSTAL HC-49/U-S 10MHz
	X1002	100C32R803	CRYSTAL DSVT-200 32.768KHz
	X4001	100CT4R407	CRYSTAL HC-49/U 4.433619MHz

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR